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ABSTRACT

This report of the Virtual Library Planning Committee (VLPC) is intending to serve as a blueprint for the University of South Florida (USF) Libraries as it shifts from print to digital formats in its evolution into a "Virtual Library". A comprehensive planning process is essential for the USF Libraries to make optimum use of technology, fulfill their collective missions, and add value to the information resources and services provided. Four key areas are articulated in this plan to guide the implementation process; the content of each of these key areas contains background information, benchmarks, appropriate standards, and selected short and long term action items. In the first area, collections and content is dealt with, and requirements for technical services are highlighted. The second section discusses interface and infrastructure, and focuses on the importance of standards. Organizational structure is addressed in the third section; institutional-wide cooperation and planning, human resources, culture shift, and staff development are dealt with in this section. The final section discusses services in the virtual library, including distance learning, staffing, instruction, current awareness services, electronic course reserves, interlibrary loan and document delivery, services to users with disabilities, and marketing. In addition, the plan includes the Virtual Library Planning Committee's methodology, a survey of peer institutions, a focus group analysis, a glossary of terms used, standards for implementation, and a list of resources. (AEF)

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The USF Libraries Virtual Library Project:
A Blueprint for Development

Virtual Library Planning Committee
University of South Florida Libraries

University of South Florida
July, 1996

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The USF Libraries Virtual Library Project:

A Blueprint for Development

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EXECUTIVE SUMMARY

Academia is in the midst of a revolution in scholarly communication. Competition private sector combined with user demands for increased access to information, more timely delivery of services, and truly international coverage of academic research areas, has thrust academic libraries in a new information arena where innovative ways of integrating new electronic services and collections with existing library services and collections must be explored. Enter the virtual library, where the incorporation of new technologies, formats, and strategies blend the best of existing services and collections the academic library has to offer today.

As libraries evolve from print to digital formats, this document serves as a blueprint for the USF Libraries in their transformation into a virtual library. The plan envisions a future that encourages innovation, progressive thinking, and collaboration among the USF Libraries.

A comprehensive planning process is essential for the USF Libraries to make optimum use of technology, fulfill their collective missions, and add value to the information resources and services provided to our users. This plan communicates a virtual library mission that represents a realistic level of aspiration for the USF Libraries and their constituents. It provides a context for resource allocation and reallocation, an essential consideration at a time when computing needs are growing proportionally faster than overall institutional budgets.

The benefits of a virtual library include:

!Improved access for USF students, staff, and faculty through a single interface that merges diverse databases into a seamless information resource and the development of resources that ensures on-site and off-site access to all USF users.

!A stronger collection for all the USF Libraries through the addition of full-text commercial databases; electronic journals; government information, including federal and state; academic resources; and locally produced databases which can include full-text, images, sound, and video.

!The development of resources that will support distance education initiatives.

!The avoidance of costly duplication between the USF Libraries through a cost-effective approach to information delivery.

!The use of standards both internal and external to ensure ease of access to multiple formats, archiving and preservation of information, and consistent application of technology across functions within the USF Libraries.

!The strengthened skills and knowledge of the staff of the USF Libraries as they

participate in the implementation of this collaborative project.

Four key areas: collections, services, organization and technology are articulated to guide the implementation process. The content of each of these key areas contains background information, benchmarks, appropriate standards, and selected short and long term action items. In addition, this plan includes the Virtual Library Planning Committee=s methodology, a survey of peer institutions, a focus group analysis, a glossary of terms used, standards for implementation, and a listing of resources consulted.

The Committee recognizes that the rapid evolution of technology dates this document before it is printed or distributed. However, the evolution for the USF Libraries must be accelerated and we hope to strengthen that evolution process, by focusing on areas that are open to successful and practical implementation. While this planning document lists more than ninety recommended action items, the Committee has selected the following as priorities for implementation.

I. True cooperative collection development among the USF Libraries

   A. Implement twenty-four hour turnaround on the delivery of books and articles among the USF Libraries.

   B. Allocate 20% off the top of the USF Libraries OCO budget in order to develop a more expansive and comprehensive collection of electronic resources.

   C. Enhance existing records within the online catalog and create new records to describe the contents of the USF Libraries Virtual Library Project Gateway.

II. Virtual Library Services

   A. Implement a USF Libraries-wide full-text course reserve system.

   B. Design and promote electronic instructional programs and services.

   C. Market the services and content of the USF Libraries Virtual Library Project to the user community.

III. Reengineering of the organizational structure

A. Hire an external consultant to initiate and implement organizational change within the USF Libraries with a focus on operational functions.

B. Increase funding and other support for staff training and retraining.

C. Hire an external Project Manager for a 1-2 year appointment to guide the implementation of the Virtual Library Project.

D. Create virtual library related project groups and teams as outlined in this documents.

IV. Interface and Infrastructure

A. Develop and administer s minimum standard for networking, desktop

B. Purchase the necessary hardware and software to support the Virtual Library Project.

The USF Libraries must strive to meet the information needs of a growing number of faculty, students, staff, and community users who reside in over fifteen counties within the state of Florida and possess a plethora of diverse information needs. Initiatives at the state level, including funding for distance education programs, mandate delivery of information resources and services to remote users rendering electronic, network-accessible library collections even more essential.

The USF Libraries face complex external forces that involve legal, economic, technological, and philosophical issues. In the networked world of today and tomorrow, libraries cannot stand alone, but must be connected, compatible, and complementary in their collections and services. Standards for services and technology will ensure that the USF Libraries can meet expanding expectations. The following plan for developent of a virtual library addresses user needs and expectations, current trends in technology, the emerging information environment, and estimates of likely resources and support.

COLLECTIONS AND CONTENT

The quality and relevance of collections available through the USF Libraries Virtual Library Project will be the ultimate measure of its value to the user community. Scholarly information in electronic form must be selected, acquired, and maintained according to the high standards of quality that guide print, microform, and media collection development today. A typical academic library=s collection development statement articulates a need to support the mission, strategies, directions, and goals for its academic programs. While the principles of collection development do not change in the virtual library based on format, methods of decision-making and specific selection guidelines must be adjusted significantly to incorporate electronic collections within the virtual library. Samuel Demas identifies management strategies that facilitate the assimilation of new information technologies into collection development. These are management strategies that:

promote flexibility in the organization

facilitate coordination and collaboration across organizational divisions

promote the ability of the staff to adapt to constant change

eliminate territoriality in the organization and develop a set of shared goals and values that will promote cooperation among administrative units

This is a new organizational model for selection and a conceptual framework for making the transition to the virtual library.

Currently, the USF Libraries provide a variety of electronic services and collections to the user community. In addition to serving as USF=s online catalog, LUIS indexes the collections of all the SUS libraries and indexes and abstracts information from books and periodicals with records numbering in the millions. LUIS also provides access to over 1600 periodicals full-text through the FirstSearch service. The USF Libraries have also made a significant investment in CD-ROM technology accompanied by many cancellations of the equivalent print title. Online services that are gateways to information resources, specifically FirstSearch and Lexis/Nexis, have added significantly to our existing electronic collection and services. At this time, titles and holdings for these full-text resources are not cataloged locally; therefore, many users are unaware that a title may be available in an electronic format.

At present, CD-ROM, online, or disk-based titles are selected, acquired, maintained, and supported at the individual campuses which does not allow for effective sharing of information or expertise or for potential group pricing discounts. Resources residing on the Internet are selected, supported, and Apointed to≅ in the same disjointed manner from the various library home pages. At the state level, decisions for databases to be mounted on LUIS are channeled through a state-wide electronic collections committee with input from the USF Libraries.

Increasingly ubiquitous Internet access within the university, combined with the growing popularity of the World Wide Web, has made online academic publishing, particularly for electronic journals, highly desirable. This creates publishing opportunities and challenges for the USF libraries. At present, there is no focused initiative within the USF Libraries to participate in the shared development and management of these growing scholarly collections.

The USF Tampa Campus Library has begun digitizing collections housed in Special Collections. Many guides to the more important collections in this area are also available on the USF Tampa Campus Library home page. The Florida Mental Health Library has mounted full-text articles and conference proceedings on its home page.

Funding for electronic resources in the USF Libraries has shifted from Aan off the top of the budget≅ approach to a formula based on student FTE. The book budget allocation for electronic resources rises every year yet remains heavily slanted toward print sources.

Benchmarks:

The VLPC has identified the following benchmarks that will measure the quality and relevancy of the electronic resources collection:

1. An electronic collection that supports the teaching and research needs of the university community and supports the work of the library staff.

2. Ongoing institutional administrative and fiscal support for electronic collections realizing that most collections have recurring charges.

3. Selection guidelines for electronic collections based on content and technical considerations. These guidelines include: access and delivery, cost/benefit to the user, support, archiving and preservation, and content.

4. Resources included in the digital library are systematically evaluated against performance measures.

5. It will contain all types of electronic formats and resources:
   a. optical, CD-ROM, magnetic tape, etc.
   b. applications software
   c. bibliographic files
   d. full-text
   e. compound documents (text and image)
   f. numeric files
   g. multi-media
   h. spatial data

6. Resources purchased for the Virtual Library Project are available to any USF user

on campus or through remote access.

Standards:

In order to meet the electronic collection development benchmarks, the VLPC recommends an adaptation of the SUS Electronic Collection Plan at the USF level as well as the University of California Libraries Collection Development Committee=s Principles for Acquiring and Licensing Information in Digital Formats.

Short term actions:

1. Implement true cooperative collection development among the USF Libraries. To begin this process, the VLPC recommends the following:
   a. Allocate 20% off the top of the USF Library Resources budget for the purchase of electronic resources.
   b. Establish an Electronic Collections Team. Membership on the Team will include one member of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services and systems. This group will be charged with:
      1. Recommending an annual electronic resources budget to the USF Library Directors.
      2. Developing a time line for reporting progress and implementation.
      3. Coordinating the systematic building of the electronic resources collection in all information genres and formats.
      4. Gauging the impact on the library of the acquisition of a potential resource before it is selected.
      5. Coordinating the library activities needed to acquire, maintain, catalog, organize, and provide services for an electronic resource or format as well as mainstreaming the resource into the existing collection and determining the level of access to provide a particular resource.
      6. Engaging in continuous evaluation to ensure that the charge of the Team is being met.

   Examples of current digital library projects that could be examined by this group are:

   Encyclopedia Britannica Online, containing the encyclopedia, the Merriam-Webster Collegiate Dictionary, the Britannica Book of the Year
   IDEAL, the International Digital Electronic Access Library project. Complete 1996 issues of 178 Academic Press journals
   QuickStart, Dialog's end-user service which provides access to over 300 bibliographic databases through a graphical user interface
   Project Muse, an example of scholarly publishing on the WWW
   Elsevier's TULIP where scanned pages are delivered to workstations

Engineering Village, a WWW site that links to hundreds of engineering and technology sites, including Compendex Web, a comprehensive engineering literature database

Institute of Physics Publishing, a publisher who provides in addition to the paper version, Internet access to full articles up to three weeks before paper publication

c. Establish an Electronic Journals Project Group. Membership on the Project Group will include one member of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services and systems. This group will be charged with:
   1. Researching potential e-journals and e-zines acquisitions.
   2. Making recommendations on content, access, cost, preservation, and archiving.
   3. Developing a time line for reporting progress and implementation.
   4. Engaging in continuous evaluation to ensure that the charge of the team is being met.
   5. Investigating collaborative ventures with other USF faculty and staff that are currently producing electronic journals and developing e-journals from existing print journals.

d. Provide twenty-four hour turnaround time for the delivery of books and articles among the USF Libraries. This will require an updated analysis of staffing resources available at each campus. The VLPC also recommends that alternative delivery methods be investigated, e.g., a courier dedicated to library delivery, Ariel, etc.

2. Establish a Digitization Project Group. Membership on the Project Group will include one member of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services and systems. This group will be charged with:
   a. Examining content, relevancy, staffing and equipment needs, costs associated with equipment digitization projects, obtaining rights to reproduce, etc.
   b. Developing a time line for reporting progress and implementation.
   c. Engaging in continuous evaluation to ensure that the charge of the group is being met.

3. Develop and implement a USF Libraries collection development statement that encompasses all formats: print, media, electronic, and digitized.

4. Investigate the scanning of tables of contents from newly acquired publications onto the Gateway.

5. Provide a form on the Gateway which will allow users to suggest potential materials purchases.

Long term action:

Develop a plan to collaborate with interested departments to participate in the development and management of electronic publishing.

TECHNICAL SERVICES

Today libraries must decide, based on their particular circumstances, whether there is a need for on-site catalogers. Ellen Zyroff identifies five factors that prompt libraries to make the decision to outsource cataloging:

1. Shared cataloging, whether through online networks, tape-load or CD-ROM products, has revolutionized the way we get usable, standardized records into the online catalog. Copy cataloging accounts in some libraries for almost all the cataloging output. Many libraries beyond the Library of Congress are recognized for the reliability of their bibliographic and authority records.

2. The Library of Congress Cataloging in Production Program (CIP) has grown from 6,500 records in 1972 to 50,961 records for computer files and books in 1994.

3. The MARC core-record concept promises to make shared bibliographic and authority records truly ubiquitous.

4. Vendors have demonstrated that they can supply or overlay accurate MARC records and can custom fit our catalogs in regard to internal authority control standards.

5. There has been a shift in responsibilities between librarians and technicians.

The virtual library concept will have tremendous impact on the technical services component of the USF Libraries. Within the virtual library, there will be substantial technical problems involving access, retrieval, protocols, and digital representation of information. The need for standardization and organization will be essential for ease of use by the users of the information, as well as for the creators and maintainers of that information. Catalogers will be crucial to the establishment and oversight of information organization and will be key to the successful access to the content of the Virtual Library Project. As Zyroff states, A...skills that assure consistency, predictability, and repeatability of access are as needed as ever... There is a precision of approach that cataloging uniquely provides with regard to the inner workings of catalogs, databases, and indexes. This and not the amount of the budget, the architecture of the building, or size of the

CD-ROM tower,...is the touchstone of good libraries.≅

Computer-readable items will require descriptive cataloging just as print materials do. There will be changes from the current descriptive cataloging rules; items will be described in digital terms and, with the inception of web-based catalogs, SGML mark-up language will be important to add Ahot≅ links to items on the online catalog. Access terms and additional indexing of large full-text files will be essential components for access to documents and files. Authority files will be needed with references to related, broader, and narrower terms to allow the use of concept mapping across disparate databases.

The design of the technical services component of the virtual library will not only involve the bibliographic control of electronic resources but will involve the acquisition of electronic information, systems planning, development, and evaluation. Funds will be encumbered electronically. Outstanding orders, electronic invoices, claims and cancellations will be handled by controlling acquisitions software.

As new standards are developed and adopted for form of entry, minimum bibliographic data entry, and metadata analysis, training for both public and technical services staff must be provided. Preservation of electronic media will fall within the purview of technical services and the requisite standards should be adopted and maintained. Refreshing and multi-generational backups and longevity of formats will require new levels of technical and systems expertise among the technical services staff.

As the virtual library becomes a reality in the USF Libraries, staffing in technical services is critical. The staff must know how to operate and utilize computers and related equipment effectively; how information is stored in computer files; how to search and retrieve stored information; how to utilize electronic gateways and networks; and how to use electronic transaction processing systems. In addition, the staff must know how to use specialized online tools with which to run acquisitions and bibliographic/authority control. Staff will need to have expertise in bibliographic utilities, MARC tagging, SGML markup, and other essential standards. As Karen Hunter states in a recent article on the TULIP project, AThe human resources used by TULIP participants were the more scarce technical staff, not student or clerical staff who do the more routine work of libraries. The hardware for distribution, storage, and access is more complicated and fragile than shelving.≅

Benchmarks:

The VLPC has identified the following benchmarks that will measure the quality of the acquisition, organization and maintenance of the electronic resources:

1. Electronic collections are acquired, organized and maintained.
2. A catalog of metadata or descriptive information about each database and its contents is created.

3. Electronic collections journal titles and holdings are cataloged, mounted, and maintained on the USF online catalog and the Gateway.

4. Electronic resources are preserved and archived.

5. There are implemented standards for electronic cataloging and authentication.

Standards:

In order to meet the technical services benchmarks for the Virtual Library Project, the following standards should be in place:

1. MARC tagging and formats, with fuller, enhanced cataloging

2. Standard Generalised Markup Language (ISO 8879)

3. DTD (document type definition)

4. Z39.50

5. JPEG and TIFF (image files)

6. Text Encoding Initiative (document format)

7. UNICODE (native language storage and retrieval)

8. Directory Information Format (DIF- metadata records for data sets)

9. Federal Geographic Data Center (FDGC- standard for spatial data sets)

10. Electronic Data Interchange (EDI) standards

11. ISO/EIC/ITU standards for the Global Information Infrastructure

12. Research Libraries Group (RLG) Task Force recommendations on archiving of digital information

Short term actions:

1. Establish a Metadata Project Group. Membership on the Project Group will include one member of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services and systems. This group will be charged with:
   a. Studying the feasibility of enhancing the current electronic collections by

adding metadata to the online catalog and the Gateway.

b. Developing a time line for reporting progress and implementation.
c. Engaging in continuous evaluation to ensure that its charge is being met.
d. Determining how SGML will work within the NOTIS environment.
e. Cataloging current electronic collections journal titles and holdings into the USF online catalog and linking them to the Gateway.
f. Investigating the most effective means of preserving and archiving electronic resources.
g. Implementing standards for authentication, user and system security, and data integrity.

2. As USF cataloging operations move toward a more specialized environment, investigate outsourcing copy cataloging for all the USF Libraries to an external source or vendor.

3. Investigate centralized cataloging among the USF Libraries utilizing minimum standards for records development that are established by the USF Libraries.

4. Develop a cataloging standards manual for use across the USF Libraries.

5. Provide a form on the Gateway for users to request ARush≅ cataloging.

Long term actions:

1. Establish and maintain standards for the format of electronic publications concurrent with the National Institute of Standards Organization and the Text Encoding Initiative.

2. Determine how Electronic Digital Interchange (EDI) will work within NOTIS.

3. Find vendors who can work with Electronic Digital Interchange (EDI) and other data transfer standards.

INTERFACE AND INFRASTRUCTURE

During the 1990's costs of computer storage, memory, and processing power decreased at impressive rates. At the same time the Internet made available large quantities of networked client-server software products available at low-cost or no-cost to educational institutions. Much of this software is currently in use on university and commercial networks and has the potential for solving longstanding library infrastructure problems. The Virtual Libraries Planning Committee strongly concurs that the innovative use of these and other technologies will produce a competitive advantage to the University in fulfilling its mission and core values. To be innovative in today's computer environment requires a willingness to investigate opportunities, to accept risk, and to develop a positive attitude towards change.

The University has seen increased computer demand and use by faculty, staff, and students; widespread use of bibliographic databases to identify the existence and content of local and remote information; the emergence of full-text electronic resources; and a plethora of network databases, protocols, and applications growing piecemeal throughout the academic setting. Library services are provided on large infrastructure technologies ranging from a centralized mainframe-based integrated library system owned and operated by FCLA to a modern client-server system that emphasizes distributed storage and processing. Each of these systems represent the best computing solution for its time. The development of small systems, ranging from single workstations to LAN=s, has been uneven both in terms of the University and the USF Libraries. Efforts are being made to address the issue of parity in computing power and access across the USF Campuses. Two of the USF Libraries (St. Petersburg and Sarasota) are in the process of developing LAN=s; however, there are no guidelines currently in place that will lead to increased communication and cooperation among these and other USF Libraries.

Systems support is also necessary to operate and maintain on a daily basis the new computer-based systems supporting the virtual library. The purpose of this service is to envision, plan, design, and/or acquire new or improved systems, to train staff to operate and manage the library's systems, and to evaluate a system upon implementation. Since the virtual library will consist of many highly sophisticated and complex computer-based systems, in house and out-of-house, it is essential that there are enough trained staff to support and maintain the libraries' systems.

Systems services must be available during prime operating hours of the USF Libraries, computer batch processes must be initiated and monitored, and new software must be tested and installed. Hardware, software, and database integrity problems must be reported to the appropriate support groups, the systems monitored, and problems solved. Data security, data integrity, refreshing mechanisms, and redundancy are other important functions of this area.

Benchmarks:

Given that the USF Libraries are heavily invested in the older mainframe technologies, the Virtual Library Planning Committee has sought ways to blend the old with the new, to match the stability of the mainframe Integrated Library System (ILS) with the flexibility of the client-server environment and the World Wide Web. In doing so, we have established the following benchmarks:

1. The USF Libraries have parity in their networking requirements, as well as workstation and desktop capabilities.

2. There is a single, uncomplicated point of access for the USF Libraries that allows efficient searches of the combined electronic collections at USF as well as a wide range of remote distributed information databases, regardless of location, format or source.

3. There are standardized, staff-utilized software packages that facilitate transfer of information among USF Libraries and encourage cost savings.

4. There are measurable information applications/services that provide access/services in a scalable, efficient, interoperable way.

5. Multiple simultaneous access exists via the USF multi-campus network and the Internet with minimal downtime or lagtime.

6. Technologies are easy to use or are in use already and services are accessible by users with widely varying skills, experiences, abilities, and backgrounds.

7. Technologies and services provide privacy, security, portability, mobility, and ubiquity.

These identified benchmarks are becoming widespread across all areas of university computing. Many of the colleges and/or departments are or have already invested in voice, data, and image networks; institutional information systems; personal computers and workstations for students, staff, and faculty; and strategic plans for information and computing technologies. The Virtual Library Project can extend these technologies and plans and support future technologies to be used at the University of South Florida.

Standards:

The USF Libraries are committed to implementing standards to facilitate access to and the sharing of data between systems. In response to the nearly universal acceptance of the World Wide Web, the VLPC is proposing the development of a Web-based interface using Z39.50 protocol, which will allow access to LUIS and other information resources. Structured Query Language (SQL) and Remote Database Access (RDA) protocols can be used to distribute

databases across multiple network hosts and to provide access to these databases. Standard Generalized Markup Language (SGML) will be the format of choice for locally mounted documents and eventual vendor-supplied document databases since it supports mathematical and scientific notation and foreign language character sets. Workstation standards should follow the findings of the current SUS Task Force on Workstation Standards.

Suggested prototype:

Using the client-server infrastructure already in place at USF the VLPC proposes a Library Gateway server that will provide a seamless interface for accessing disparate databases on the Internet. An example of such an interface can be seen in the University System of Georgia=s GALILEO initiative. The USF Gateway will be based on Z39.50 protocol. A list of hardware and tested software is provided below:

SERVER: Dedicated server hardware, e.g. Sun SPARC machine.

SERVER SOFTWARE: Sun Solaris 2.5, NCSA HTTPD Webserver or Apache Web-server, Perl or TCL, HTML.

DATABASE: MiniSQL, Postgres95.

PROTOCOLS: SQL, RDA, HTTP, Z39.50, TCP/IP.

CLIENT: A Windows machine, a Macintosh, or some other computer which can support a graphical Web browser and a connection to the Internet or a connection to a private TCP/IP network. The connection can be through a dialup SLIP/PPP account or direct local area network. Minimum connectivity would be a computer or terminal that can provide VT100 emulation and a network connection or a modem connected to a phone line.

CLIENT SOFTWARE: A web browser, preferably a graphical browser such as Netscape or Mosaic, is a requirement. If Postscript files are to be accessed, Acrobat Reader, a utility that works within Netscape, is essential. A minimal requirement would be a textual browser such as Lynx. Another requirement would be Telnet or TN3270 to provide additional access to remote sites.

Other options that would serve users would be spreadsheet software, bibliographic management software, statistical packages, and text editing capabilities. The cost of these are yet to be determined but could be controlled through the use of the educational discount given by major vendors to educational institutions.

ACCESS RESTRICTIONS: Access would be restricted by domain using Webserver and IP matching software to verify status of user. This is especially important to retain the rights to use proprietary databases and other software applications.

INTEGRATED LIBRARY SYSTEM: Changes to MARC records will be in SGML (a recognized text standard) and consistent with MARBI 856 extensions, Text Encoding Initiative standards, and Z39.50 standards. Other standards for electronic currency exchange and data exchange will reflect nationally recognized standards for these transactions (ISO- and/or ANSI-based). Document standards will be based on the SGML standard which supports mathematical and scientific notation and foreign language character sets and UNICODE which is fast becoming the standard for native language sets and is supported with SGML coding.

The development of an interface to provide a single point of access to databases is critical to the success of the Virtual Library Project. The goal is to present the various resources and access mechanisms as a unified whole, whether the database is mounted locally or accessed over networks. Beyond providing access, the interface will also function as a Acatalog≅ of these resources, housing descriptive and retrieval information about each database. This catalog, or metadata database, will aid the user in selecting the appropriate resource to meet their research needs. This strategy will positively impact the user, who will be able to rely on the USF Libraries Gateway for access to international, national, and local information resources.

The limitations inherent in implementing such a system are essentially in terms of scale. The gateway functions themselves, rather than Telnet, and cataloging issues are probably best accomplished within the framework of the NOTIS ILS were it to be upgraded into a client-server system. Although efforts are underway to improve the LUIS interface, an upgrade is unlikely, at least to the degree of functionality that an altogether new ILS or the USF Libraries Gateway would provide.

Short term actions:

1. Create an Interface Design Project Group. Membership on the Project Group will include one member of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services, and systems. This group will be charged with:
   a. Providing recommendations on the design and implementation of the Gateway interface.
   b. Naming the USF Libraries Virtual Library Project Gateway.
   c. Developing a format/logo to use in all Virtual Library Project announcements.
   d. Developing a time line for reporting progress and implementation.
   e. Engaging in continuous evaluation to ensure that its charge is being met.
2. Hire an external interface designer to work with the Interface Design Project Group for the purpose of creating the visual interface, implementing technical standards, and resolving connectivity issues.

3. Develop and implement a mainframe linked Web Gateway capable of providing access to a wide range of databases through a common graphical user interface.

4. Investigate the feasibility of FCLA mounting databases exclusively for the USF Libraries or the Florida Triangle Libraries (FSU, UF, USF) which are beyond the scope of the SUS Electronic Collection.

5. Support Academic Computing proposals to implement T-1 telecommunication lines from Tampa to St. Petersburg and to Sarasota.

6. Develop compatible networking infrastructures at each of the USF Libraries.

7. Link USF Libraries communication infrastructures together through standard office suites, communication packages and through Multicast backbone (Mbone) video conference capabilities. Link Library staff and users utilizing free narrow bandwidth conferencing technologies such as CU-Seeme and Microsoft's NetMeeting which allows visual communication between two sites utilizing PCs and video cameras.

Long term actions:

1. Develop a plan to fund the maintenance of technology as a vital capital asset, rather than by the traditional deferred maintenance model.

2. Develop budgetary allocations for new workstations on a four year cycle along with upgrades of server software, electronic storage, and memory.

3. Purchase laptops or portable computers for staff in place of desktop models.

4. Create, as appropriate, open use computer labs equipped with scholar workstations in each library.

5. Investigate use of private networks such as Telecommunications Linking Program through OCLC.

6. Develop a plan for refreshing of media, multi-generational backups, remote storage, and disaster recovery.

7. Design a mechanism for ongoing maintenance and updating of resources available on the gateway.

8. Investigate the purchase of laptops or portable computers with standardized software for in-library circulation.

9. Cross-train library staff to function as "back-up" for technical support on specific functions and/or tasks.

10. Ensure timely and effective communication within and across the USF Libraries on new systems implementations, applications, protocols, etc.

The Gateway infrastructure is one item of many required for the development of an infrastructure capable of supporting a virtual library at USF. Other issues of concern, though not specifically infrastructure in nature, involve how to focus overall coordination of information resources across the USF Libraries so that each Library has responsibility and ownership in the process. Similarly, support will be required for the USF Libraries in their efforts to focus on information management and access as well as the traditional acquisition, organization, and preservation of information.

THE IMPORTANCE OF STANDARDS

With the promise of access by the virtual library, issues of digital storage and dissemination of information must be met with an infrastructure that allows for technological change. An effective technical infrastructure for the optimized use of networked resources must be designed and built using international standards to ensure interoperability across multiple environments.

The primary components of electronic distribution are production, distribution, behavioral changes, and legal issues. Data storage versus online delivery, file formats, network topology and protocols, authentication of documents, and quality maintenance, archiving, and user interfaces are but a few of the issues that must be addressed in the implementation of the virtual library.

The virtual library will also increase the comprehensiveness and value of the USF Libraries collections by strengthening their ability to integrate materials in diverse formats, including digital texts, multimedia, spatial and numerical data sets, and software-dependent data objects, geographic information systems (GIS) and computer-assisted drafting (CAD). This can best be achieved with the design of a seamless interface based, again, on international standards.

Preservation of digital materials for long periods of time, across multiple generations of hardware and software technologies and standards is critical. The virtual library must be able to recognize formats and have the technical ability to display, perform, or otherwise interact with materials developed for obsolescent computer systems written in forgotten programming languages. Encoding of structure, format, and content may vary and affect both use and the ability to archive.

It is essential that standards be adopted across the USF Libraries to ensure homogeneity in operations, technologies, and services. Existing Internet protocols are clearly inadequate to handle the challenges of a virtual library, e.g., current protocols such as HTTP do not allow the user to update a set of located information asynchronously.

The use of standards will reduce confusion from incompatible tools, formats, and models;

insulate developers and users from technology instability; support increasing degrees of data complexity; allow inclusion of technologies on an Aas-needed≅ basis, and allow the sharing of research and development results from the USF Libraries to the larger library and university communities.

By defining minimal MARC standards, using Standard Generalized Markup Language (SGML) for full-text documents, the appropriate formats for sound, motion, etc. in field delineated files, the USF Libraries can utilize and harness evolving standards such as Z39.50 and GILS without modifying existing data. Metadata will include a description of the content of the database, available index strategies and access methods, the integrity mechanisms, and other administrative information. The interface can access this data and translate query requests, map between data types and formats, and resolve schema inconsistencies. For the end-user, this translates into new collaborative ways of learning, gathering information, and doing research.

Benchmark:

The Virtual Library Project has protocols and standards for data and metadata, high-level languages for users and library staff, and low-level protocols to support library interoperability.

Short term actions:

1. Encode all features of information objects in proprietary software that runs on specific operating systems in standard formats with appropriate documentation for data and codebooks.

2. Acquire and distribute copies of all recommended standards to the USF Libraries so each Library has its own Astandards center.≅

Long term actions:

1. Construct a model of network topologies that support the use of digital library resources.

2. Assess and develop models for a truly distributed network environment.

3. Become involved in the engineering/architecture of needed technologies and identify digital library tool classes.

4. Develop a usage record keeping system for the virtual library with shared analysis tools and procedures.

5. Make the collected data publicly available in aggregate form, ensuring privacy of individual users.

6. Capture and share the current status of standardization relative to the Global Information Infrastructure needs.

ORGANIZATIONAL STRUCTURE

As the USF Libraries respond to rapid changes in the information environment, organizational change must occur. There is an integral link between successful leadership, human resources, and organizational structure. If there is a weakness in any one component, it will negatively impact the other two. In the Higher Education Information Resources Alliance's discussion on developing an organization that intensively utilizes information technology, a key component to success is the ability to show flexibility and rapid response to change. This is mirrored in the qualifications necessary for staff to work effectively in a rapidly changing environment. The literature points to two key components in creating an effective organizational structure: the flattening of the structure and developing project management structures such as working groups, project groups, or teams across functional areas and library lines.

The University of South Florida Libraries have a unique reporting structure. The Library Directors, as a group, work together to bring issues to the table for discussion and resolution. The inception of the Virtual Library Project ensures that this collaboration will increase. As with any large, multi-campus system, the Library Directors are faced with increased initiative and decision-making responsibilities. The single most important factor for the success of the Virtual Library Project is a vision that is meaningful to the directors, faculty, and staff. This vision must be one that is shared by the all the directors and strenuously advocated within their individual institutional settings.

The Library Directors need to have the ability to foster an environment which supports the innovations in technology and services without fear of losing their autonomy or institutional authority. This environment, collegial and collaborative in nature, should encourage more inter-institutional activities and decision-making processes.

INSTITUTIONAL-WIDE COOPERATION AND PLANNING

It is critical to the success of the Virtual Library Project that the USF Libraries develop mechanisms that will transcend the efforts of the individual USF Libraries that participate at any given time. Partnerships, consortia, and alliances will hold considerable benefits for the USF Libraries and its users by creating new ideas for information access, physical access to library holdings, a more expansive pool of expertise, and a potential reduction of interorganizational duplication.

In an era of networked information, institutions are realizing that no library can sustain a self-sufficient, self-contained collection into the indefinite future. Technology allows radical possibilities for libraries that will uncouple ownership from access. Commitment to this new institutional effort across the USF Libraries will mean a radical shift in the daily work in the university libraries and an intense, concerted effort to implement this new model for the virtual

library. Incremental and diffused changes among the USF Libraries acting alone will not be effective and, in the long run, prove too costly. The USF Libraries, which now operate as independent organizations, must join efforts to acquire the requisite capital, build a new organizational structure and work toward the shift in the organizational culture necessary to move the USF Libraries into the virtual library environment. The USF Libraries, operating as a coordinated alliance, utilizing strategic action plans, and capital reallocation, can move boldly into the twenty-first century. As Patricia Battin suggests, in Organizing and Managing Information Resources on Campus, AThe persistent and futile attempt to finance contemporary information services from the conceptual and financial perspectives developed for the pretechnological age can only frustrate our aspirations and surely dilute the quality of research and instruction in our society.≅

In order to enhance information access and services for users of the USF Libraries, the libraries must begin to transcend geography. A start can be made by developing a single interface for the USF Libraries to access the various virtual services and collections, developing true collection development for electronic as well as the print and non-print collection, and creating a rapid and reliable document delivery system among the USF Libraries.

Currently, the USF Libraries operate in a collegial, cooperative manner, yet each operates independently of the other. Technology, services provided to our users, and collection development issues have pulled the USF Libraries closer together in the last five years. As an agency of the State University System, the Florida Center for Library Automation (FCLA) has succeeded in creating a certain degree of technological and electronic collection parity among the SUS and the USF libraries. FCLA provides crucial support to the SUS libraries by way of: the online catalog, LUIS, which connects the ten SUS institutions; the provision of library PCs; the mounting of over twenty citation databases on the online catalog; and support for the cataloging, circulation, acquisitions, and serials control subsystems.

Benchmarks:

The following benchmarks identified by the VLPC will assess the ability of the USF Libraries to develop an organizational structure that can react positively and rapidly to a changing information environment:

1. Leadership and expertise resides at all levels.

2. Working relationships are based on a team model and allow for greater participation at all levels in the decision-making process.

3. The organizational structure is built around the functions and new role of the virtual library, and stresses outcomes and delivery at the point of need.

4. Staff are involved in collaborative decision-making with other institutional entities on the USF campuses in the design and implementation of the virtual

library.

5. The USF Libraries implement new ideas and technologies across all campuses, though the creation of project groups to facilitate planning and implementation of the Virtual Library Project.

6. The USF Libraries engage in cooperative ventures between two or more libraries that improve information access and reduce duplication of efforts.

7. The USF Libraries improve bibliographic and physical access to resources and collections through the acquisitions, classification, and support of appropriate collections supported by a fast and efficient resource sharing program.

8. The USF Libraries build complementary collections and develop new library services.

9. The USF Libraries seek funds to support cooperative programs.

10. The USF Libraries develop strong organizational structures and share staff and professional expertise.

11. The USF Libraries emphasize projects that concretely benefit their users.

12. Where appropriate, the USF Libraries encourage that its business be conducted and facilitated through the use of technology.

Short term actions:

1. Organizational change consultant
Hire an external consultant, such as Maureen Sullivan, an expert for organizational change within libraries, to examine the current organization of the USF Libraries and make recommendations for change in light of the coming virtual library. The focus on organizational change will be on the operational functions of the USF Libraries. The consultant will make recommendations on the operating procedures and structure of work groups and teams, as well as the operating procedures and structure for the Project Manager and the Interface Designer.

2. Task Forces
At institutions that have successfully implemented a virtual library program, work groups and task forces were developed to collaboratively review work flow, policies and procedures, overlap, and to create implementation plans to effect organizational change. A well planned project group composition is crucial to each project group's success. After priorities are set, a strategic plan should be

formed, implemented, and the project is then evaluated for effectiveness.

The VLPC has identified eight project groups and teams to begin the planning and implementation process. They include:

!Interface Project Design Group
!Electronic Collections Team
!Digitization Project Group
!Electronic Journal Project Group
!Metadata Project Group
!Electronic Reserves Project Group
!Staff Development Team
!Virtual Library Implementation Team

The Virtual Library Implementation Team will consist of the members of the Virtual Library Planning Committee. This team should be considered an oversight committee for the implementation of the Virtual Library Project. Composition for each of these teams or project groups will be individually tailored but should have the same basic features: one representative of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services and systems. Each group will have a clearly defined charge, and will engage in continuous evaluation to ensure the charge of the group is being met. Each group will also develop a time line for reporting and evaluation.

3. Project Manager
   a. Seek and obtain funding to hire an external project manager, for a defined period of time (1-2 years), for the purpose of implementation and coordination of the Virtual Library Project as outlined in this document.
   b. The organizational change consultant will make recommendations regarding the reporting structure and accountability for this position.

4. Regional Coordination
   Assign responsibility to an individual or a task force, such as the Electronic Collections Committee that will follow the planning initiative of the Monticello Project and its implications for the USF Libraries.

5. Regional Alliances
   Investigate alliances within the state and beyond.

Long term actions:

1. Develop new services at the local, state, regional, national, and international levels.

2. Build strong, complementary collections at the SUS and regional levels.

HUMAN RESOURCES

Kenneth Dowlin suggests that the emphasis on the library=s human resources will shift from the end of the stream, which helps the patrons find books, to the front line, which will organize information so that they can find it themselves. Von Wahlde and Schiller expect to see librarians producing more information, rather than distributing information, and serving in strong collaborative roles with colleagues and educators.

The USF Libraries= faculty and staff members have tackled increased work loads, decreased funding and staff levels while dealing with the complexities of new technologies. These trends will certainly continue. There are several issues that must be addressed in order to effect change within the organizational structure and to ensure the necessary levels of job skills.

CULTURE SHIFT

Much of this document=s cited literature discusses change at the technological level. Catalogers will develop bibliographic records using SGML hyperlinks, collection development librarians will select Internet sources, reference librarians will engage in the design and publication of electronic services and resources, interlibrary loan is shifting to electronic receipt of user-initiated requests and end-user electronic document delivery, reserves will move to an electronic full-text format, and library administration will direct major organizational redesign.

The more knowledge staff have, the more comfortable they will be with change. Staff will need to understand not only their own role within the organization, but also the functions and relationships among the USF Libraries and their areas.

This process of change will require that the staff possess creativity, a more global point of view, flexibility, and adaptability. There will be a culture shift that will take place over the next two to five years, much like the change the USF Libraries encountered when implementing NOTIS, which automated many of the circulation, acquisitions and cataloging functions. Library faculty and staff need to be assured of their importance and value within the new organizational structure. It is the responsibility of the USF Libraries to assist in creating an organizational environment which encourages innovation.

Benchmarks:

Human resources are the most valuable asset of the USF Libraries. The VLPC has identified the following benchmarks as a means of judging the USF Libraries= abilities to utilize human resources to their fullest potential.

1. The USF Libraries acknowledge, define the causes of, the need for, and the benefits of change.

2. Each USF Library clearly defines its mission and goals to identify commonalities across campuses while recognizing their distinct attributes.

3. Staff has the opportunity to learn about, and develop a commitment, to the mission and goals of the USF Libraries.

4. Staff is involved in the process of change through their inclusion on project groups as outlined in the Organizational Structure section of this document.

5. Well defined modes of communication are established within each library and among the USF Libraries.

6. Creative, flexible, energetic, enthusiastic, and highly qualified faculty and staff are attracted and retained.

Short term actions:

1. Each USF Library will support the participation of its library faculty and staff in their involvement in project groups and teams, professional development, retraining, and cross-training to meet the demands of new technologies in a planned and coordinated manner.

2. Each USF Library will review and update as needed, their mission and goals statements to incorporate the technological expectations of their patrons. This will be done with input from their respective library faculty and staff.

3. The Project Manager, Project Group, and Team representatives will be accountable for reporting to their respective areas and libraries on their progress in a regularly scheduled fashion.

4. Job descriptions will be reviewed to ensure that they reflect the evolving library environment.

5. Job vacancy announcements and advertisements will seek out staff and faculty with the experience and qualifications necessary to thrive in a rapidly changing technological environment.

STAFF DEVELOPMENT

Rapidly evolving technological developments will require staff to attain a greater depth and breadth of knowledge. There will be a greater emphasis on cross-training as organizational structures shift and interdepartmental cooperation increases. New job responsibilities will appear and current responsibilities will shift to other staff or disappear. While all staff currently utilize some form of technology in their job duties, there will be more emphasis on the amount and complexity of use.

Benchmarks:

A strong staff development program will be assessed by the following benchmarks as identified by the VLPC.

1. All staff have the necessary resources and support to perform at a maximum level in the new information environment.

2. Staff training is ongoing and includes all levels of staff.

3. New technologies are utilized to facilitate training.

4. Staff training is centralized and coordinated among the USF Libraries.

5. Staff training opportunities are communicated throughout the USF Libraries.

Short term actions:

1. Create a Staff Development Team. Membership on the Team will include one member of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services and systems. This group will be charged with:
   a. Identifying facilitators such as library staff, USF computing staff, FCLA staff, and others to provide training on new technologies: hardware, software, changing job duties, etc.
   b. Coordinating the development of cross-training programs to standardize policies and procedures, evaluate work flow, and to incorporate new technology as appropriate.
   c. Developing a time line for reporting progress and implementation.
   d. Engaging in continuous evaluation to ensure that the charge of the team is being met.
   e. Setting up staff training sessions on current library operations (e.g., OCLC CatME and Custom Holdings, Pro-Cite, LEXIS/NEXIS).
   f. Developing and disseminating a USF Libraries Directory containing an organizational chart of each library, staff members, their phone numbers, e-mail addresses, and job responsibilities.

2. Provide equitable support from each library at a minimum of $500.00 for each USF librarian and $100.00 for each USPS staff member annually for:
   a. national, state, and regional conference participation,
   b. fee-based external workshops, and
   c. campus training programs.

3. Create a USF Libraries= listserv which will facilitate staff input on policies, procedures, forms, meeting minutes, as well as announcements of training programs, meetings, vacancies, etc.

Long term actions:

1. Encourage and support library faculty to take professional development leaves to develop new programs, projects, or innovative uses of new technology that may result in professional publication.

2. Maintain an on-going evaluation program to ensure that training is available for new technologies, work flows, and responsibilities.

3. Use new technologies to facilitate training of large groups on a multi-campus, networked basis.

SERVICES IN THE VIRTUAL LIBRARY

The development of an interface to provide a single point of access to electronic resources is a first step toward the implementation of the Virtual Library Project. At present, users of the USF Libraries are often overwhelmed with information opportunities available through the online catalog, CD-ROMs, online services, local networks, and the Internet. When the Virtual Library project is implemented, the number of electronic sources that will be acquired by the USF Libraries will grow, however, the interface or Gateway will present the various resources and access mechanisms as a unified whole, whether the database is mounted locally or accessed over networks. Beyond providing access to electronic resources, the Virtual Library Project will also provide a range of services to the user, including various levels of instruction and timely delivery of information.

DISTANCE LEARNING

The University's Distance and Technology Mediated Learning Program has become an important component of the University=s mission. As the program grows, the USF Libraries will develop new services, some of which are already available, that will provide users with the opportunity to learn about and utilize the libraries' resources and services with minimal or no physical contact with the library facilities. Services will include instructional tools, access to the full-text of course reserve materials, interlibrary loan and document delivery, as well as numerous types of electronic service request forms. Behind the scenes, enhanced records in the online catalogue and the Gateway will provide easier access to the disparate databases available to remote users. Although these services housed on the Gateway will be accessible to all patrons, they will be essential to the distance learner.

STAFFING

Staff in public service areas will be impacted by the implementation of the Virtual Library Project. Traditional roles of librarians and support staff will shift to encompass a broader, technology-driven service role. In addition to teaching and the support of user services, librarians in public service areas will engage in the planning and development of new services, systems, and delivery mechanisms. Public services staff will interact more with the technical service staff in the identification of and access to electronic resources and in the creation of specialized databases based on user needs and expectations. There will be more communication and planning across the public and technical services staff to provide increased access to materials housed within the USF virtual library. Lines between librarians and support staff will become blurred, as the scope of instruction and assistance will change, with more instruction given at the point of need. As the emphasis shifts from ownership to access of materials, staff in interlibrary loan and document delivery areas will learn to utilize tools and technologies to

enhance speed and quality of services. Staff will focus on outcomes, which will require the elements of flexibility, creativity, and adaptability when performing job duties. Reserve staff's duties will shift from the daily servicing and physical management of the collection, to the receipt, scanning, and technical management of the electronic course reserve collection.

INSTRUCTION

The virtual library environment requires us to rethink how we will assist and instruct users whose needs and expectations have changed along with the new levels of technology. It is critical to develop an instructional program to teach self-sufficiency and promote information literacy to users in an evolving online environment. The instructional program should strive to teach skills and competencies that will enable users to conceptualize, interpret, and manage information. Instruction librarians must also claim an active role in the design of the virtual library, as they are able to articulate user needs.

John Dewey once said, AA problem is half solved if properly stated.≅ This is true when asking a librarian or by constructing a search query in an electronic database. Users of the virtual library require instruction in first selecting the most appropriate electronic resource and then navigating that resource properly. Once the sought after information is found by the user, they are then faced with the difficult task of evaluating materials. The libraries' instruction program must transcend the teaching of the mechanics of information seeking and strive to teach critical thinking skills. The complex environment of rapidly expanding information resources necessitates the ability of the user to discern valid and useable information from the irrelevant and erroneous. Users of the virtual library will be taught to not only search for information, but to select, analyze, and evaluate that information after it is located.

Currently, the USF Libraries provide familiar modes of instruction, including traditional group lectures, course-related instruction, and the teaching of several library research credit courses each semester. Reference assistance at the USF Libraries consists of in-person reference encounters, telephone reference assistance, and an e-mail reference service.

Benchmarks:

The measure of an instruction program that will develop self-sufficiency and electronic information literacy will be judged on the following benchmarks as identified by the VLPC.

1. The USF Libraries develop and promote instructional programs and services that are reflective of the different learning styles and technological affinities of users. These programs and services include:
    a. online tutorials available through the Gateway
    b. electronic instruction aids available through the Gateway
    c. group instruction in a traditional or electronic classroom setting
    d. online interactive research assistance

2. The teaching of critical thinking skills is to be a component of the libraries' instruction programs.

3. Instructional programs and services are designed based on desired competency levels.

4. Each component within the instruction program is evaluated periodically to gauge its effectiveness.

5. Instruction librarians are involved in the design of the Gateway, as they are able articulate user needs and demands.

6. Instruction programs and services are an ongoing effort of the USF Libraries.

Standard:

In order to meet the instruction benchmarks, the VLPC recommends that any instruction program be designed in accordance with the AGuidelines for Instruction Programs in Academic Libraries,≅ promulgated by the Instruction Section of the Association of College and Research Libraries (ACRL).

Short term actions:

1. Scan and load all current user aids that relate to electronic resources available on the USF Libraries Virtual Library Project Gateway.

2. Create a set of online tutorials for using and accessing the databases available through the Gateway.

3. Implement multi-campus online registration and request forms for instructional sessions.

4. Market the USF Libraries' instruction program to the university community.

5. Place a reference e-mail form in various places on the Gateway.

6. Integrate the resources on the Gateway into all of the USF Libraries= instruction programs.

Long term actions:

1. Study the feasibility of designing an online information literacy program for students to complete as a university requirement.

2. Work collaboratively with faculty members to design integrated course-related instruction for the purpose of teaching and reinforcing research skills.

3. Create a series of task-oriented help programs to integrate into the USF Libraries Virtual Library Project Gateway.

4. Investigate the potential of interactive "real time" reference services via the Internet.

CURRENT AWARENESS SERVICES

Beyond being an access point to the Virtual Library Project=s many electronic resources, the Gateway should provide a mechanism to maintain current awareness of new publications, to save search strategies, subject headings, and lists of records across multiple databases. Users will be given the opportunity to "register" with the system, which will allow the user to customize the interface with a personal profile. Regular searches of databases would be performed and results would be automatically sent to the user. Currently, the USF Libraries provide access to one commercial current awareness service, CARL UNCOVER/REVEAL, which is a customized electronic mail alert service to tables of contents from more than 16,000 periodicals.

Benchmarks:

The relevance and quality of current awareness services will be assessed on the following benchmarks identified by the VLPC:

1. The Virtual Library Project provides a profile service to users, whereby they can request and receive automatic updates of searches in multiple databases available on the USF Libraries' Gateway.

2. The user customizes resources to meet their information needs.

3. Services are broad-based to cover all user information needs.

4. The services are efficient and user-friendly.

Short term actions:

1. Place a link to the UNCOVER/REVEAL service onto the Gateway.

2. Examine the feasibility of adding other commercial current awareness services to the Gateway.

Long term actions:

Develop software that allows users to save and automatically run profiles across multiple electronic resources available through the Gateway, including the online catalog.

ELECTRONIC COURSE RESERVES

One important component to the Virtual Library Project is the accessibility of course reserve materials through the Gateway. There is a need to incorporate current advances in information technology and apply them to a much needed and heavily used set of materials. To meet this need, the full-text of course reserve materials from all the USF Libraries can be scanned into a database that would be connected to the library=s Gateway. Copyright compliance issues for these electronic course reserve materials must be addressed. The full-text of reserve materials are currently not available online at the USF Libraries. Users are able to access an index to course reserve materials for selected campuses on LUIS. Patrons can find out what is on reserve but must come to the library to use reserve materials.

Benchmarks:

The useability and quality of the electronic course reserve system will be measured by the following benchmarks, as identified by the VLPC:

1. Remote users and onsite users access these materials.

2. There is multiple simultaneous access to single copies of reserve materials for printing and viewing.

3. There is a comprehensive interface to all digitized course materials, copyrighted and non-copyrighted.

4. Compilation of usage statistics each semester gauge the use of individual items.

5. Full-text, image, multi-media and graphical documents are mounted through the electronic course reserve system.

Standards:

In order to meet the benchmarks set for electronic course reserves, the VLPC recommends that the USF Libraries comply with the AFair Use Guidelines for Electronic Reserves Systems≅ developed by the Association of Research Libraries.

Short term actions:

1. Appoint the Electronic Reserves Project Group. Membership on the Project Group will include one member of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services and systems. This group will be charged with:
   a. Designing and implementing a full-text electronic course reserve system available through the Gateway.
   b. Establishing an uncomplicated method for submission of materials, by developing a standardized electronic form that will be on the Gateway and actively encourage faculty to utilize it.
   c. Developing a time line for reporting progress and implementation.
   d. Engaging in continuous evaluation to ensure that its charge is being met.

2. Establish connectivity between the online reserve system and the library catalog.

INTERLIBRARY LOAN AND DOCUMENT DELIVERY

Few libraries are able to collect the full range and quantity of materials demanded by their users for a number of reasons, including the proliferation of published information, economic constraints, and the rising cost of serials. Libraries have been increasingly dependent on external sources of materials to supplement their local collections. Timely exchange of resources between libraries, as well as the purchase of individual documents from commercial document delivery services are crucial elements of a successful library service. As more bibliographic information becomes available to a greater number of users, the Virtual Library Planning Committee anticipates that demand for these delivery services will increase. Implementation of the Virtual Library Project will enable the user to select and acquire the documents they need without the mediation of the library staff. Users are interested in the timeliness of the transaction, not the source of the document. It is the responsibility of the libraries to design an efficient, user-friendly mechanism to request and receive documents. However, the design of this feature will require more intensive "behind the scenes" selection and acquisition than is currently the practice within the USF Libraries.

Benchmarks:

In order to assess the ability of the USF Libraries to provide timely exchange of resources and delivery of documents to the user, the VLPC has identified the following benchmarks:

1. Twenty-four hour turnaround time for the delivery of books and articles among

the USF Libraries is provided.

2. When available and appropriate, commercial document delivery services are used by interlibrary loan staff for the timely delivery of resources.

3. All user request forms are standardized among the USF Libraries.

4. End-user document delivery services are available.

Standards:

In order to meet the benchmarks set for interlibrary loan and document delivery, the VLPC recommends the USF Libraries follow the guidelines indicated in the National Interlibrary Loan Code for the United States, the Florida Plan for Interlibrary Cooperation Resource Sharing and Network Development, and any other consortial agreements.

Short term actions:

1. Conduct a time study, assessing the speed and scope of the current interlibrary loan transaction.

2. Investigate alternative delivery methods for materials among libraries. Some possibilities are alternative package delivery systems, fax and digital technologies.

3. Review commercial document delivery services in order to make informed decisions about vendor selection. Some considerations should be price, speed, and quality of prints.

4. Standardize all request forms (ILL/REC/Document Delivery) into one campus-wide multi-purpose form that is placed on the Gateway. Provisions should be made to ensure that the appropriate interlibrary loan department receives each request.

5. Embark on a pilot project to implement user-initiated document delivery using library funds.

Long term actions:

1. Investigate the design and/or implementation of software that allows library users, rather than staff, to place inter-campus, interlibrary loan, and document delivery requests for materials.
2. Design a mechanism to allow users to personally order and receive materials from commercial document delivery services.

SERVICES TO USERS WITH DISABILITIES

The increasing amount of electronic information, along with developments in adaptive technology allows libraries to extend services to new populations of information users. The availability of library resources through the desktop allows users whose workstations include adaptive peripherals to have access to all that the virtual library has to offer. The challenge will be to make these adaptive technologies available within the library. Currently, a limited number of workstations for patrons with disabilities have been placed within the USF Libraries. These workstations provide adaptive technologies such as voice synthesis software, screen magnification software, and scanning software.

Benchmark:

In order to evaluate the ability of the USF Libraries to meet the needs of users with disabilities, the VLPC has identified the following benchmarks:

1. The USF Libraries considers the special needs of users with disabilities when selecting new technologies and resources.

2. Workstations with adaptive technologies are available at all USF Libraries with similar software.

3. Instructional programs are designed to accomodate patrons who have physical or mental disabilities.

Standards:

In order to meet the benchmarks set for services to users with disabilities, the VLPC recommends that the USF Libraries follow guidelines and recommendations proposed by Project EASI, Equal Access to Software Information, which is a project of EDUCOM's Educational Uses of Information Technology program.

Short term action:

1. Load adaptive software, screen magnification and voice synthesis, on at least one workstation at each USF Library, to permit access to LUIS and other electronic resources.

2. Conduct a survey at each of the USF Libraries using the EASI Adaptive Computing Self-Evaluative Kit for Colleges and Universities.

Long term action:

Investigate the potential of implementing graphical user interfaces and other new

adaptive technologies as they are developed.

MARKETING

The real revolution in information technology is about communication, not computation. This assumption is the basic fabric of library partnership. Although technological innovation is required of all USF Libraries, the essential catalyst for change must be in how our cooperative efforts are communicated both internally and externally, electronically and in print. Currently, various marketing methods include flyers, the USF-NEWS listserv, the *Oracle*, *Inside USF*, word-of-mouth, departmental liaisons, Library and Information Science classes, bibliographic instruction lectures, reference desk encounters, personal contact, and the AWhat's New≅ section on library home pages.

Benchmark:

In order to measure the effectiveness of a marketing program for the Virtual Library Project, the VLPC has identified the following benchmarks:

1. The USF Libraries regularly disseminates information using a wide variety of formats, including electronic.

2. Virtual Library Project publications, logos/logotypes, and layouts are standardized so that potential users will find them instantly recognizable as Virtual Library Project materials.

3. The USF Libraries communicate effectively to a growing and diverse user population.

Short term actions:

1. Include an Aannouncements≅ section on the Gateway to advertise new services and databases, changes in services, and instructional workshops available.

2. Include the Gateway URL on library stationary.

3. Place an electronic suggestion form on the Gateway.

4. Engage in outcome assessment to ensure that the marketing program is effectively meeting the needs of the USF user population.
5. Utilize the USF Libraries= instructional programs as a means of marketing the resources on the Gateway.

Long term actions:

1. Expand marketing and use of the Virtual Library Project on the university campus-wide information system.

2. Promote the USF Libraries' Gateway in print publications via articles, on listservs, and via popular World Wide Web stopping points such as ACool Site of the Day.≅

3. Incorporate the Gateway into university promotional films and packages.

4. Describe technical and staff achievements at conferences, fundraisers, and presentations.

CONCLUSION

It is time for the University of South Florida Libraries to move to the forefront of information technology. Listening to members of the USF community express their desires for their future research needs, the bottom line was access to information in multiple formats independent of location and time from a single, seamless interface. These needs are met through the implementation of the Virtual Library Project. The benefits of a virtual library include:

!Improved access for USF students, staff, and faculty through a single interface that merges diverse databases into a seamless information resource and the development of resources that ensures on-site and off-site access to all USF users.

!A stronger collection for all the USF Libraries through the addition of full-text commercial databases; electronic journals; government information, including federal and state; academic resources; and locally produced databases which can include full-text, images, sound, and video.

!The development of resources that will support distance education initiatives.

!The avoidance of costly duplication between the USF Libraries through a cost-effective approach to information delivery.

!The use of standards both internal and external to ensure ease of access to multiple formats, archiving and preservation of information, and consistent application of technology across functions within the USF Libraries.

!The strengthened skills and knowledge of the staff of the USF Libraries as they participate in the implementation of this collaborative project.

These efforts will support the University=s increasingly diverse population, will meet or exceed state mandates, and will place the USF Libraries in a position to respond and adapt to rapidly changing forces being brought to bear upon the University. Because of the complex nature of the Virtual Library Project, it is crucial to have the Project carefully coordinated. The starting point for this is the use of an external consultant to initiate organizational change. The individual who then coordinates the implementation is the Project Manager. These and other components of the Project will require both internal and external funding commitments in order to succeed.

> AThe virtual library has been defined as the concept of remote access to the contents and services of libraries and other information resources, combining an on-site collection of current and heavily used materials in both print and electronic form, with an electronic network which provides access to, and of delivery from, external worldwide library and commercial information and knowledge sources. In essence the user is provided the effect of a library which is a synergy created by bringing together technologically the resources of many, many libraries and information services.≅
>
> D. Kaye Gapen, *The Virtual Library: Visions and Realities*

Illustrations:
Gateway Prototype

APPENDIX ONE:
ACTION ITEMS

Short term actions:

1. Implement true cooperative collection development among the USF Libraries. To begin this process, the VLPC recommends the following:
   a. Allocate 20% off the top of the USF Library Resources budget for the purchase of electronic resources.
   b. Establish an Electronic Collections Team. Membership on the Team will include one member of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services and systems. This group will be charged with:
      1. Recommending an annual electronic resources budget to the USF Library Directors.
      2. Developing a time line for reporting progress and implementation.
      3. Coordinating the systematic building of the electronic resources collection in all informatio genres and formats.
      4. Gauging the impact on the library of the acquisition of a potential resource before it is selected.
      5. Coordinating the library activities needed to acquire, maintain, catalog, organize, and provide services for an electronic resource or format as well as mainstreaming the resource into the existing collection and determining the level of access to provide a particular resource.
      6. Engaging in continuous evaluation to ensure that the charge of the Team is being met.

   Examples of a few of the current digital library projects that could be examined by this group are:

   !Encyclopedia Britannica Online, containing the encyclopedia, the Merriam-Webster Collegiate Dictionary, the Britannica Book of the Year.
   !IDEAL, the International Digital Electronic Access Library project. Complete 1996 issues of 178 Academic Press journals.
   !QuickStart, Dialog's end-user service which provides access to over 300 bibliographic databases through a graphical user interface
   !Project Muse, an example of scholarly publishing on the World Wide Web.
   !Elsevier's TULIP project where scanned pages are delivered to a workstation.
   !Engineering Village, an example of a WWW site that links to hundreds of

engineering and technology sites, including Compendex Web, a comprehensive engineering literature database.

!Institute of Physics Publishing, a publisher who provides in addition to the paper version, Internet access to full articles up to three weeks before paper publication.

c. Establish an Electronic Journals Project Group. Membership on the Project Group will include one member of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services and systems. This group will be charged with:
   1. Researching potential e-journals and e-zines acquisitions.
   2. Making recommendations on content, access, cost, preservation and archiving.
   3. Developing a time line for reporting progress and implementation.
   4. Engaging in continuous evaluation to ensure that the charge of the team is being met.
   5. Investigating collaborative ventures with other USF faculty and staff that are currently producing electronic journals and developing e-journals from existing print journals.

d. Provide twenty-four hour turnaround time for the delivery of books and articles among the USF Libraries. This will require an updated analysis of staffing resources available at each campus. The VLPC also recommends that alternative delivery methods be investigated, e.g. a courier dedicated to library delivery, Ariel, etc.

2. Establish a Digitization Project Group. Membership on the Project Group will include one member of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services and systems. This group will be charged with:
   a. Examining content, relevancy, staffing and equipment needs, costs associated with equipment digitization projects, obtaining rights to reproduce, etc.
   b. Developing a time line for reporting progress and implementation.
   c. Engaging in continuous evaluation to ensure that the charge of the group is being met.

3. Develop and implement a USF Libraries collection development statement that encompasses all formats: print, media, electronic, and digitized.

4. Investigate the scanning of tables of contents from newly acquired publications onto the Gateway.

5. Provide a form on the Gateway which will allow users to suggest potential materials purchases.

6. Establish a Metadata Project Group. Membership on the Project Group will include one member of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services and systems. This group will be charged with:
   a. Studying the feasibility of enhancing the current electronic collections by adding metadata to the online catalog and the Gateway.
   b. Developing a time line for reporting progress and implementation.
   c. Engaging in continuous evaluation to ensure that the charge of the group is being met.
   d. Determining how SGML will work within the NOTIS environment.
   e. Cataloging current electronic collections journal titles and holdings into the USF online catalog and linking them to the Gateway.
   f. Investigating the most effective means of preserving and archiving electronic resources.
   g. Implementing standards for authentication, user and systems security, and data integrity.

7. As USF cataloging operations move toward a more specialized environment, investigate outsourcing copy cataloging for all the USF Libraries to an external source or vendor.

8. Investigate centralized cataloging among the USF Libraries utilizing minimum standards for records development that are established by the USF Libraries.

9. Develop a cataloging standards manual for use across the USF Libraries.

10. Provide a form on the Gateway for users to request ARush≅ cataloging.

11. Create an Interface Design Project Group. Membership on the Project Group will include one member of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services and systems. This group will be charged with:
   a. Providing recommendations on the design and implementation of the Gateway interface.
   b. Naming the USF Libraries Virtual Library Project Gateway.
   c. Developing a format/logo to use in all Virtual Library Project announcements.
   d. Developing a time line for reporting progress and implementation.
   e. Engaging in continuous evaluation to ensure that the charge of the team is being met.

12. Hire an external interface designer to work with the Interface Design Project

Group for the purpose of creating the visual interface, implementing technical standards, and resolving connectivity issues.

13. Develop and implement a mainframe linked Web Gateway capable of providing access to a wide range of databases through a common graphical user interface.

14. Investigate the feasibility of FCLA mounting databases exclusively for the USF Libraries or the Florida Triangle Libraries (FSU, UF, USF) which are beyond the scope of the SUS Electronic Collection.

15. Support Academic Computing proposals to implement T-1 telecommunication lines from Tampa to St.Petersburg and to Sarasota.

16. Develop compatible networking infrastructures at each of the USF Libraries.

17. Link USF Libraries communication infrastructures together through standard office suites, communication packages, and through Multicast backbone (Mbone) video conference capabilities. Link Libraries staff and users using free narrow bandwidth conferencing technologies such as Cu-Seeme and Microsoft=s NetMeeting. Utilizing a PC and a video camera, this will allow visual communication between two sites.

18. Encode all features of information objects in proprietary software that runs on specific operating systems in standard formats with appropriate documentation for data and codebooks.

19. Acquire and distribute copies of all recommended standards to the USF Libraries so each library has its own Astandards center.≅

20. Hire an external consultant, such as Maureen Sullivan, an expert for organizational change within libraries, to examine the current organization of the USF Libraries and make recommendations for change in light of the coming virtual library. The focus on organizational change will be on the operational functions of the USF Libraries. The consultant will make recommendations on the operating procedures and the structure of work groups and teams, as well as the operating procedures and structure for the Project Manager and the Interface Designer.

21. At institutions that have successfully implemented a virtual library program, work groups and task forces were developed to collaboratively review work flow, policies and procedures, overlap, and to create implementation plans to effect organizational change. A well planned project group composition is crucial to each project group's success. After priorities are set, a strategic plan should be formed, implemented, and the project is then evaluated for effectiveness.

The VLPC has identified eight project groups and teams to begin the planning and implementation process. They include:

!Interface Project Design Group
!Electronic Collections Team
!Digitization Project Group
!Electronic Journal Project Group
!Metadata Project Group
!Electronic Reserves Project Group.
!Staff Development Team
!Virtual Library Implementation Team

The Virtual Library Implementation Team will consist of the members of the Virtual Library Planning Committee. This team should be considered an oversight committee for the implementation of the Virtual Library Project. Composition for each of these teams groups will be individually tailored but should have the same basic features:

!one representative of the Virtual Library Implementation Team; representation from each USF library, where practicable; and representation by function, with the functions being public services, technical services and systems. Each group will have a clearly defined charge, and will engage in continuous evaluation to ensure the charge of the group is being met. Each group will also develop a time line for reporting and evaluation.

22. Project Manager
    a. Seek and obtain funding to hire an external project manager, for a defined period of time (1-2 years), for the purpose of implementation and coordination of the Virtual Library Project as outlined in this document.
    b. The organizational change consultant will make recommendations regarding the reporting structure and accountability for this position.

23. Assign responsibility to an individual or a task force, such as the Electronic Collections Committee that will follow the planning initiative of the Monticello project and its implications for the USF Libraries which covers the electronic delivery of journals, government resources, theses and dissertations, and special collections.

24. Investigate alliances within the state and beyond.

25. Each USF Library will support the participation of its library faculty and staff in their involvement in project groups and teams, professional development, retraining, and cross-training to meet the demands of new technologies in a planned and coordinated manner.

26. Each USF Library will review and update as needed, their mission and goals

statements to incorporate the technological expectations of their patrons. This will be done with input from their respective library faculty and staff.

27. The Project Manager, Project Groups, and Team representatives will be accountable for reporting to their respective areas and libraries on their progress in a regularly scheduled fashion.

28. Job descriptions will be reviewed to ensure that they reflect changing library environment.

29. Job Vacancy Announcements and advertisements will seek out staff and faculty with the experience and qualifications necessary to thrive in a rapidly changing technological environment.

30. Create a Staff Development Team. Membership on the Team will include one member of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services and systems. This group will be charged with:
    a. Identifying facilitators such as library staff, USF computing staff, FCLA staff, and others to provide training on new technologies: hardware, software, changing job duties.
    b. Coordinating the development of cross-training programs to standardize policies and procedures, evaluate work flow, and to incorporate new technology as appropriate.
    c. Developing a time line for reporting progress and implementation.
    d. Engaging in continuous evaluation to ensure that the charge of the team is being met.
    e. Setting up staff training sessions on current library operations (i.e. OCLC atME, & Custom Holdings, Procite databases, resources on LEXIS/NEXIS).
    f. Developing and disseminating a USF Libraries Directory containing an organizational chart of each library, staff members, their phone numbers, e-mail addresses, and job responsibilities.

31. Provide equitable support from each library at a minimum of $500.00 for each USF librarian and $100.00 for each USPS staff member annually for:
    a. national, state, and regional conference participation,
    b. fee-based external workshops, and
    c. campus training programs.

32. Create a USF Libraries= listserv which will facilitate staff input on policies, procedures, forms, meeting minutes, as well as announcements of training programs, meetings, vacancies, etc.

33. Scan and load all current user aids that relate to electronic resources available on the USF Library Virtual Library Project Gateway.

34. Create a set of online tutorials for using and accessing the databases available the Gateway.

35. Implement multi-campus online registration and request forms for instructional sessions.

36. Market the USF Libraries' instruction program to the university community.

37. Place a reference e-mail form in various places on the Gateway.

38. Integrate the resources on the Gateway into all the USF Libraries= instruction programs.

39. Place a link to the UNCOVER/REVEAL service onto the Gateway.

40. Examine the feasibility of adding other commercial current awareness services to the Gateway.

41. Appoint the Electronic Reserves Project Group. Membership on the Project Group will include one member of the Virtual Library Implementation Team; representation from each USF Library, where practicable; and representation by function, with the functions being public services, technical services and systems. This group will be charged with:
    a. Designing and implementing a full-text electronic course reserve system available through the Gateway.
    b. Developing a time line for reporting progress and implementation.
    c. Engaging in continuous evaluation to ensure that the charge of the team is being met.
    d. Establish an uncomplicated method for submission of materials, by developing a standardized electronic form that will be on the Gateway and actively encourage faculty toutilize it.

42. Establish connectivity between the online reserve system and the online catalog.

43. Conduct a time study, assessing the speed and scope of the current interlibrary loan transaction.

44. Investigate alternative delivery methods for materials among libraries. Some possibilities are alternative package delivery systems, fax and digital technologies.

45. Review commercial document delivery services in order to make informed

decisions about vendor selection. Some considerations should be price, speed, and quality of prints.

46. Standardize all request forms (ILL/REC/Document Delivery) into one campus-wide multi-purpose form that is placed on the Gateway. Provisions should be made to ensure that the appropriate interlibrary loan department receives each request.

47. Embark on a pilot project to implement user-initiated document delivery using library funds.

48. Load adaptive software, screen magnification and voice synthesis, on at least one workstation at each USF Library, to permit access to LUIS and other electronic resources.

49. Conduct a survey at each of the USF Libraries using EASI Adaptive Computing Self-Evaluative Kit for Colleges and Universities.

50. Include an Aannouncements≅ section on the Gateway to advertise new services and databases, changes in services, and instructional workshops available.

51. Include the Gateway URL on library stationary.

52. Place an electronic suggestion form on the Gateway.

53. Engage in outcome assessment to ensure that the marketing program is effectively meeting the needs of the USF user population.

54. Utilize the USF Libraries= instructional programs as a means of marketing the resources on the Gateway.

Long term actions:

1. Develop a plan to collaborate with interested departments to participate in the development and management of electronic publishing.

2. Establish and maintain standards for the format of electronic publications concurrent with the National Institute of Standards Organization and theText Encoding Initiative.

3. Determine how Electronic Digital Interchange (EDI) will work within NOTIS.

4. Find vendors who can work with Electronic Digital Interchange (EDI) and other data transfer standards.

5. Develop a plan to fund the maintenance of technology as a vital capital asset, rather than by the traditional deferred maintenance model.

6. Develop budgetary allocations for new workstations on a four year cycle along with upgrades of server software, electronic storage, and memory.

7. Purchase laptops or portable computers for staff in place of desktop models.

8. Create, as appropriate, open use computer labs equipped with scholar workstations in each library.

9. Investigate use of private networks such as Telecommunications Linking Program through OCLC.

10. Develop a plan for refreshing of media, multigenerational backups, remote storage, and disaster recovery.

11. Design a mechanism for ongoing maintenance and updating of resources available on the Gateway.

12. Investigate the purchase of laptops or portable computers with standardized software for in-library circulation.

13. Cross-train library staff to function as Aback-up≅ for technical support on specific functions and/or tasks.

14. Ensure timely and effective communication within and across the USF Libraries on new systems implementations, applications, protocols, etc.

15. Construct a model of network topologies that support the use of digital library resources.

16. Assess and develop models for a truly distributed network environment.

17. Become involved in the engineering/architecture of needed technologies and identify digital library tool classes.

18. Develop a usage record keeping system for the virtual library with shared analysis tools and procedures.

19. Make the collective data publicly available in aggregate form, ensuring the privacy of individual users.

20. Capture and share the current status of standardization relative to the Global

Information Infrastructure needs.

21. Develop new services at the local, state, regional, national, and international levels.

22. Build strong, complementary collections at the SUS and regional levels.

23. Encourage and support library faculty to take professional development leaves to develop new programs, projects, or innovative uses of new technology that may result in professional publication.

24. Maintain an on-going evaluation program to ensure that training is available for new technologies, work flows and responsibilities.

25. Use new technologies to facilitate training of large groups on an multicampus, networked basis.

26. Study the feasibility of designing an online information literacy program for students to complete as a university requirement.

27. Work collaboratively with faculty members to design integrated course-related instruction for the purpose of teaching and reinforcing research skills.

28. Create a series of task-oriented help programs to integrate into the USF Libraries Virtual Library Project Gateway.

29. Investigate the potential of interactive Areal time≅ reference services via the Internet.

30. Develop software that allows users to save and automatically run profiles across multiple electronic resources available through the Gateway, including the online catalog.

31. Investigate the design and/or implementation of software that allows library users, rather than staff, to place inter-campus, interlibrary loan, and document delivery requests for materials.

32. Design a mechanism to allow users to receive materials from commercial document delivery services.

33. Investigate the potential of implementing graphical user interfaces and other new adaptive technologies as they are developed.

34. Expand marketing and use of the Virtual Library Project on the university campus-wide information system.

35. Promote the USF Libraries Gateway in print publications via articles, on listservs, and via popular World Wide Web stopping points such as ACool Site of the Day.≅

36. Incorporate the Gateway into university promotional films and packages.

37. Describe technical and staff achievements at conferences, fundraisers, and presentations.

APPENDIX TWO: METHODOLOGY

The Virtual Libraries Planning Committee first convened in September 1995. At that meeting the committee was charged with the task of preparing a proposal for a university-wide virtual library. The committee is composed of eight librarians representing five of the University of South Florida (USF) Libraries and Florida Gulf Coast University. Because of the significant geographic distance among several of the participating libraries, the committee decided to conduct weekly conference calls to communicate individual progress relating to the project. Additional information was distributed primarily over electronic mail.

The first area of research addressed by the committee was a comprehensive review of the literature. Bibliographic databases were selected by group consensus and assigned to committee members for examination. Each member was asked to select the best two to four resources from their assigned databases. These articles were then shared among members of the committee. Library Literature, LISA, ERIC, Periodical Abstracts, WorldCat, UnCover, Lexis/Nexis, ABI/ Inform and Business Index were all searched for the following keywords: (Electronic or Digital or Virtual) and Library. Because of the rapidly changing nature of this topic, the searches were limited to information published within the last three years. Another area searched was the Internet. Numerous libraries, academic institutions, and umbrella organizatrions, such as HEIRA and EDUCOM, are publishing conference papers, technical papers, and planning documents on the Internet.

There is a vast amount of literature available on the subject of virtual and/or digital libraries. Many of the publications involve discussions of progress on digital library projects currently underway at some of the larger universities and research centers. Other articles discuss the need for improved indexing, stability, and organization in electronic resources. It was more difficult to locate articles on planning the virtual library and its services. A report published by the State University of New York-Stony Brook was particularly helpful for its discussions on planning strategies. The literature search allowed the committee members to absorb a great deal of background on the subject of virtual libraries and, although the initial literature search was concluded in late 1995, the committee members continued to watch for relevant publications to incorporate into the document.

While the literature search was in progress, each committee member was also asked to search for relevant conferences and workshops that could provide a more up-to-date view of virtual library research. Electronic listservs such as LIBREF-L, LIBADMIN, PACS-L, ASIS-L, and LITA-L were particularly useful for locating conference announcements. The Eventline database in FirstSearch also provided meeting information. Conferences selected for attendance included ASIS Conference on Digital Libraries (Dallas, February 1996), Computers in Libraries (Crystal City, February 1996), ACM Digital 96, (Bethesda, March 1996), and AThe Successful Library≅ (Cornell University, April 1996). While all conferences were successful in providing

information on cutting edge research, the Cornell workshop was particularly helpful with the planning aspects of the proposal.

One area of importance to the project was an analysis of how the electronic resources at the USF Libraries compared to similar institutions. Fifteen universities were selected as peer institutions based on ARL or ACRL statistics for enrollment, staff size, collection size, and budget. A survey instrument was prepared and distributed to each institution that had agreed to participate in the survey. The goal of the survey was to examine specific details on electronic collections and services, the status of cataloging for electronic resources, the hardware available, staffing, and fiscal support for electronic resources. Eight surveys were returned. A tabular summary is available in Appendix Four comparing the peer institutions with the USF Libraries.

One of the primary goals of the Virtual Libraries Planning Committee was to create a resource that would be user-centered. Focus groups were used as an initial method for examining the needs of USF users. Because of the diverse populations residing within the USF community, a total of twelve sessions were conducted. User groups included USF library staff and faculty, USF teaching and research faculty and staff, USF students, New College faculty and students, Marine Science faculty and students, and Florida Mental Health faculty, staff and graduate assistants. In addition to the general focus groups, two focus groups were also conducted with the USF Academic Computing Committee and the Systems Administrators Group. The aim of each focus group was to develop an impression of the current use of electronic resources at USF and the perceived electronic needs and desires within the USF community. Focus group meetings were advertised through local electronic bulletin boards, printed flyers, and word of mouth. The desired size of each group was ten to twelve participants although many groups were smaller. Each session lasted approximately ninety minutes. A Virtual Libraries Planning Committee member was selected to moderate each session with other committee members acting as notetakers. To allow the focus group participants to speak as freely as possible, committee members did not normally participate in sessions conducted on their home campuses. In order to provide anonymity within the groups, participants were identified by their status only. The notes from each session were transcribed and examined using cluster analysis. Focus group questions and results are attached as Appendix Three.

After compiling the results of the literature search, the information gleaned at national conferences, the survey comparisons and the focus group analysis, many common themes began to emerge:

- !the importance of expanding the electronic collections to include more full-text, data, and multi-media
- !the need to improve the organization and indexing of electronic collections
- !the need to provide a more useable interface
- !the need to provide an awareness for the user of the availability of electronic resources
- !the need to provide instruction in a variety of formats
- !the need to provide an infrastructure that adequately supports the resources of the virtual library

Most importantly, the research conducted by the VLPC confirmed the sense of rapid and profound change for libraries which will result in a change in user needs.

APPENDIX THREE:
FOCUS GROUPS

!March 15, 1996
- !Library Staff
- !Library Faculty
- !New College Faculty and Students

!April 8, 1996
- !St. Petersburg Marine Science Faculty and Students
- !St. Petersburg Faculty and Students

!April 10, 1996
- !Academic Computing Committee and Systems Administrators Group

!April 11, 1996
- !Sarasota USF Faculty

!April 15, 1996
- !Tampa Faculty

!April 19, 1996
- !Tampa Students
- !Tampa Staff
- !FMHI Faculty (Teaching and Research)

!April 23, 1996
- !FMHI Staff and Graduate Assistants
- !FMHI Faculty and A&P Staff

FOCUS GROUP QUESTIONS

Library Faculty and Staff

1. What does the phrase Avirtual library≅ mean to you? How would you define a virtual library?

2. Do you currently use electronic resources in your work or in your personal research?
Where do you use them?

3. Which electronic resources do you use?

4. Describe an experience using these electronic resources, positive and negative.

5. What services would you like the virtual library to provide to you?

6. What services would you like to see delivered to the library staff through the virtual library that are currently not available?

7. What services would you like to see delivered electronically to the user (faculty, staff, students) through the virtual library?

8. What will be the effect of the virtual library on the role of the library staff?

9. What changes do you anticipate in your local library behavior such as demands and expectations related to information technology services?

USF Faculty, Staff, and Students

1. What does the phrase Avirtual library≅ mean to you? How would you define a virtual library?

2. Do you currently use electronic resources in your work or in your personal research?
Where do you use them?

3. Which electronic resources do you use?

4. Describe an experience using these electronic resources, positive and negative.

5. What services would you like the virtual library provide you?

6. What services would you like to see delivered electronically to the user (faculty, staff, students) through the virtual library?

7. What changes to you anticipate in your research behavior related to virtual library initiatives? (Examples include demands, expectations, needs such as training, physical changes such as location, hours, etc.)

Academic Computing Committee and USF Systems Administrators

1. What does the term Avirtual library≡ mean to you? How would you define a virtual library?

2. What projects are you working on or have you heard of that would be of relevance to planning a virtual library?

3. What resources, human and machine, do you think USF computing could bring to bear on building a virtual library?

4. Does USF have the technical know-how to construct such a system or should outside contracting be sought?

5. What are the political, technological, and economic constraints on such an endeavor? What are the advantages?

6. What are some priorities that should be given to choosing a particular collection to digitize, new service to offer, or improvement to an existing service?

FOCUS GROUP ANALYSIS

Commonalities noted among all the user groups

1. Different user groups have different needs and different expectations. The virtual library must be designed with a user interface that doesn=t devolve to the lowest common denominator.

2. Need for a more useable interface, particularly for LUIS.

3. Need for better help screens.

4. Need for better search engines.

5. Need for more training. Training should be in several formats: electronic and in person, group and individual.

6. Would like the ability to customize electronic resources to meet individual needs.

7. Need access to raw data.

8. Need the ability to download and export.

9. Need better organization of electronic resources.
10. Want/like electronic forms, particularly ILL.

11. Need better turnaround time for document delivery.

FOCUS GROUP EXCERPTS

Excerpts and summaries from focus group participant=s comments:

WHAT IS THE VIRTUAL LIBRARY?

!24 hour access from home or anywhere you have a computer
!a wide array of formats
!access to more resources, more quickly
!ability to browse in the virtual library
!It=s important that the virtual library look like a library
!A place to find sources that I can=t get elsewhere
!the virtual library should make my life easier
!virtual library should be dynamic, exciting, interconnected resources
!virtual library must service the people first and be an enhancement to the quality of services
!get it to me fast
!provide layered information in a relational concept
!as someone in the library, what it means to me is a lot of work
!I think this (virtual library) could be very elitist (cost-wise) -- the efforts that were made with public libraries to make them accessible to all may not continue
!We don=t want to lose the spirit of this (making information free and accessible)

COLLECTIONS AND CONTENT

!standards and quality control
!it seems like everyone is doing their own thing -- there are different operating systems -- the standardization of technology is important
!LUIS doesn=t tell me anything about what is in the book
!need better organization -- finding the correct site to get information
!need a graphical interface to actually see the table of contents, indexes and authors biographies
!need more government documents
!need raw data
!need lots more full-text
!E-journals
!links to local resources
!we should digitize high use materials
!concerns about copyright
!I don=t want to walk into the library and just see a room full of databases. The physical collections should not be discarded in favor of databases

!maybe the library can better document the lack of use of some of the print sources to convince the departments to move more money to technology

WHAT RESOURCES WOULD YOU LIKE TO SEE?

!Core reference collection (indexes and reference books)
!maps, movies, pictures, full-text -- all digitized
!SUNLINK
!government statistical data
!electronic bibliographies
!citation indexes online
!course outlines
!conference proceedings
!phone directories
!full-text periodicals
!local maps including campus maps
!travel information
!USF policies, procedures and publications
!a searchable list of documents available from USF
!information needed by USF staff to do their jobs
!a tour of the library using virtual reality technology

INTERFACE

!ability to download and export
!better printing capabilities
!access to information should vary according to the sophistication of the user
!privacy in my communication to the virtual library
!ability to prompt the user through a search
!useable interface -- the interfaces are really UGLY
!it has to be easy to use
!how about better displays of information -- there=s too much trash on the screen -- collapse the data and make it relevant
!if you don=t have success the first time in a search, you don=t go back
!need a graphical user interface
!should be a way to get assistance other than through F1
!better help screens
!if you need training there is something wrong with the system
!my problem is finding the correct site to get information
!want a seamless interface
!want to see a relationship between materials
!need a much simpler system than NOTIS for the public to use -- it needs to be much more self-explanatory and user-friendly
!possible need for more telecommuting (so a library participant could work from home)

!the goal should be ease of use and availability of materials -- if this is not the goal, then you are making a big mistake

INFRASTRUCTURE

comments from non-library participants:

!how about making passwording easier for remote access

!traffic and speed are problems

!the computer in my office on campus is 5-7 years old, has no fiber access or web access

!there are differences in access among the departments

!the university needs to be budgeting for future replacements as recurring expense not as one-time purchases

!the major conference in my field is publishing their proceedings on CD-ROM only and not all faculty have CD-ROM=s on their PC=s

comments from library participants:

!we need standardized computers and keyboards

!I have no problem, everything is within ten feet of me, I have access to what I need but NOTHING WORKS!

!My computer is very old and very slow

!It is almost impossible to get on the Internet between about 10 a.m. and 10 p.m. (Because of traffic). This has to get better before virtual libraries will become a reality

!Who=s going to pay for all this -- both the university costs and the costs to the individual

!USF promoted the Internet without enough modems to handle it

!We=ve had to really scream and shout to get the equipment we need (in technical services) as opposed to public service areas which seem to have more

ORGANIZATIONAL STRUCTURE

comments from participants outside of the library system:

!support staff are needed

!hire more staff so we can get what we want now -- I don=t want to hear that the journals aren=t on the shelf because there isn=t enough staff

!we need more staff in the library

!funding for training, especially for reference librarians so that they can teach the patrons well

!with the volume of resources in the library, the library staff does not have the time to have an interaction with every person -- they need more people not less

comments from the library participants:

!I don=t think we will ever be staffed to give necessary individual instruction -- demand will continue to grow -- should be addressed institutionally as to how we can meet this new role

!public service and technical service need to communicate to understand why the system does something ... let each other know what we need and what our patrons need

SERVICES:

!We need interactive training programs -- with a Alive≅ person available to help you
!the virtual library should be personalized and customized for me -- it should be able to set up a profile and find information on my interests
!it should have a profile of me and automatically download information to me
!Would like to be able to create personalized profiles
!Would like an ILL form personal template so you don=t have to redo form after form
!Faculty and students need training
!AEducate us≅
!librarians should not only teach the Ahow to≅ aspect but also teach evaluating skills
!I=d like to have some education on the Internet -- I want formal instruction
!it will be important to teach students to evaluate sources on the Internet
!how many professors are up-to-date on what=s going on in the library... professors need to understand for the sake of their students -- a lot of faculty just don=t know what is available (in the library)
!training of users is important -- students should be required to take a class in library research
!We need training, both online and live (one-to-one) -- people have different learning styles
!Need for handouts and electronic bibliographies
!current awareness
!I would like to get information on new sources acquired (by the library) -- I get cryptic messages about what we have but I don=t know what it is
!We need more personalized service from the librarian=s -- spend time with the patron
!Electronic ILL forms (many comments on this)
!Book renewal online
!Electronic reference service
!the library needs to be more involved in distance education
!one day turnaround for journal articles
!electronic reserves
!Why don=t you build some pages keyed to individual classes
!circulation policies are inequitable among students and faculty -- this should be eliminated by the virtual library

APPENDIX FOUR:
SURVEY

Peer Group Institutions									
	U of South Florida	*U of CA-Santa Barbara*	*U of Cincinnati*	*Florida State*	*U of Florida*	*Louisiana State*	*U of South Carolina*	*Texas A&M*	*VA Polytech Inst*
I. OPAC									
A. What type of OPAC do you use?	NOTIS	NOTIS	OCLC	NOTIS	NOTIS	NOTIS LMS	NOTIS	NOTIS	VTLS
B. How do you use it?									
1. Is it command driven?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Does it have a graphical user interface?	No		No	No	No	Yes, WinPac	No	No	Yes
3. Is it WWW-based?	No		No	No	No	WebPAC	No	No	Not yet
4. What kinds of electronic services other than databases are available through your OPAC? Please describe: (i.e. ILL requests, electronic reserve, online book requests, etc.)	None	None	All described	Internet and dedicated gateways		None	Infoshare databases, ILL requests	None	None
II. ELECTRONIC COLLECTIONS/ SERVICES									
A. CD-ROM databases and databases on diskette:									
1. Estimate the number of titles of *commercially* produced CD-ROM and databases on diskette available to the end user.	STP-16 TPA-60 HSC-100 SAR-9 FMH-6; plus 50 online to all	150	over 1000	26	600	80	About 30	225---120 databases, 125 CD-ROMs	180
2. Estimate the number of federal depository CD-ROM titles that are available for public use.	TPA-275 SAR-1	10	100	200-in house, 700 circulating	1000	300	1	200	700
3. How do you									

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Peer Group Institutions									
	U of South Florida	*U of CA-Santa Barbara*	*U of Cincinnati*	*Florida State*	*U of Florida*	*Louisiana State*	*U of South Carolina*	*Texas A&M*	*VA Polytech Inst*
provide access to the commercially produced CD-ROM and diskette based products?									
a. Single use on-site work station	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
b. Multiple users on-site	STP, TPA, SAR-No; HSC, FMHI-Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes
c. LAN	HSC,TPA, FMHI-Yes; STP, SAR-No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
d. Campus network	No	No	Yes	No	Yes	Yes	Yes	Yes	No
e. Restricted dial-up*	STP, TPA, SAR-No; HSC, FMHI-Yes	No	Yes	No	Yes	No	No	No	No
f. Open dial-up*	No	No	Yes	No	No	No	No	No	No
4. How do you provide access to the federal depository CD-ROM titles?									
a. Single use on-site	TPA-Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
b. Multiple users on-site	TPA-No	No	Yes	No	Yes	No	No	Yes	
c. LAN	TPA-No	No	No	No	Yes	Yes	No	Yes	
d. Campus network	TPA-No	No	No	No	Yes	No	No	No	
e. Restricted dial-up*	TPA-No	No	No	No	No	No	No	Yes	
f. Open dial-up*	TPA-No	No	No	No	No	No	No	No	
B. Online commercial databases:									

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Peer Group Institutions									
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1. How do you provide access to these resources?									
a. Single use on-site	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
b. Multiple users on-site	Yes	No	Yes	No	Yes	No	Yes	No	Yes
c. LAN	TPA, STP, SAR-No; HSC, FMHI-Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes
d. Campus network	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes
e. Restricted dial-up*	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes
f. Open dial-up*	No	No	Yes	No		No	Yes	No	No
C. Locally Produced databases:									
1. How do you provide access to these resources?									
a. Single use on-site	HSC,SAR, FMHI-Yes		No		No	No	Yes	No	No
b. Multiple users on-site			Yes		No	No	Yes	No	Yes
c. Campus network	FMHI-Yes		Yes		No	Yes	Yes	No	Yes
d. Restricted dial-up*			Yes		No	No	Yes	No	Yes
e. Open dial-up*	FMHI-Yes		Yes		No	No	Yes	No	No
(*dial-up=on- and off-campus access)									
2. Briefly describe the content of the locally produced databases:	HSC-Health care related SAR-New College theses FMHI-Library and special collections holdings; consortium biblio		Online catalog OhioLink access	N/A			Library holdings, Movietone news collection, Scottish literature, general film collection, manipulative downloads of ICPSR, and GIS		Electronic journals, Reserve materials-produced by teaching faculty, Newspaper indices

Peer Group Institutions									
	U of South Florida	*U of CA-Santa Barbara*	*U of Cincinnati*	*Florida State*	*U of Florida*	*Louisiana State*	*U of South Carolina*	*Texas A&M*	*VA Polytech Inst*
D. Full-text databases:									
1. Do you provide access to full-text databases?	Yes	Yes	Yes	No		Yes	No	Yes	Yes
2. If yes, is it text only?	Yes FMHI-No		Yes		No	Yes		In some it is text only-LEXIS/NEXIS; others are full image	Mainly
3. Text and image?	No FMHI-Yes	Yes	No		Yes				Elsevier Journals (Tulip Project)
4. Text, image and multi-media?	No		No						
E. Provide basic information on utility software available to the public (word-processing, spreadsheet software-database management):	TPA,STP, SAR-None; FMHI, HSC-spread-sheet, word processing, presentation, and biblio-graphic software		None			None	We provide all three through the network.		Some labs e-mail, Web access, MS Word
F. Library homepage on WWW:									
1. Full-text materials on WWW: Are they:									
a. In-house databases	FMHI-Yes		Yes			Yes	Yes		Yes
b. Special collections materials			Yes			Yes	Yes		Yes
c. Dissertations			Yes			No	No		No
d. Journals, newspapers			Yes			No	Yes		Yes
e. Other			Yes, grants abstracts, OhioLink, PhoneDisk, etc.			No			

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Peer Group Institutions									
	U of South Florida	*U of CA-Santa Barbara*	*U of Cincinnati*	*Florida State*	*U of Florida*	*Louisiana State*	*U of South Carolina*	*Texas A&M*	*VA Polytech Inst*
2. Do you use electronic forms on your homepage?		No	Not yet, scheduled for the near future	No	Not quite yet, working on it		In progress		
a. ILL	HSC, STP, TPA, FMHI-Yes; SAR-No					Yes			Yes
b. Materials for purchase	STP, SAR-No; HSC, TPA-Yes					No			Yes
c. Holds	No					No			Yes
d. Reference questions	HSC, STP-No; TPA, SAR, FMHI-Yes					Yes			Yes
e. BI requests	HSC, STP, SAR-No; TPA, FMHI-Yes					No			
f. Reserve form	HSC, STP, SAR, FMHI-No; TPA-Yes					No			Yes
g. Suggestion box	HSC,STP, TPA, FMHI-Yes; SAR-No					Yes			No
h. Other	STP-audiovisual equipment requests TPA-renewal of books, document delivery, online searches FMHI-document delivery					No			Online searches
G. E-Journals:									
1. Does the library receive e-journals?	STP, SAR-No; HSC, TPA, FMHI-Yes	No	Yes	No	Yes	No	No		Yes
2. Are they cataloged on OPAC?	No		No		Yes			No	Yes
3. Are they archived?	No		Yes		Yes			No	Yes
H. Electronic Course									

Peer Group Institutions									
	U of South Florida	*U of CA-Santa Barbara*	*U of Cincin-nati*	*Florida State*	*U of Florida*	*Louisi-ana State*	*U of South Carolina*	*Texas A&M*	*VA Polytech Inst*
Reserve:									
1. Do you have a full-text online course reserve system or are you developing one?	Developing	Yes	Yes	Yes	Developing	No	Testing	No; planned	Yes
a. If yes, are you including locally produced materials?		Yes	Yes	Yes	Yes				Yes
b. Copyrighted materials?		No	Yes		In Future				Yes
c. How does the student access the electronic course reserve collection?		Single-user workstation on LAN	Online cat (OhioLink)						Via Web
I. Document Delivery/Resource Sharing:									
1. What are the Amain≅ commercial vendors that you use?	STP-Uncover, UMI HSC-None TPA, SAR-UMI, ISI, CARL FMHI-CARL		Innovative Interfaces	Uncover/RLIN	CARL Uncover	UMI, CISTI, BRI, CARL Uncover	CARL	UMI, CISTI, BRI, ISI, CAS, Uncover	UMI
2. Do you provide funding to patrons for direct document delivery services? (Request that are not mediated by library staff)	No; FMHI-Yes	No	No	No	No	Yes	Yes	No	FirstSearch Doc Delivery
3. Do you utilize Ariel for resource sharing?	HSC, STP, SAR, FMHI-No; TPA-Yes	Yes	Yes	Yes	Yes	Very little	Yes	Yes	Yes
4. What is the average delivery time for an ILL request?	STP-10 days; HSC-24 hours; TPA-2-4 weeks; SAR-14	10 days	3 days	3 weeks		Doc. Del-24 hrs; Returned items-2 weeks	2 weeks	From document suppliers-3 days; from libraries- 9 days for	ARIEL-Next day; processed within a day

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Peer Group Institutions									
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	days; FMHI-4 weeks							articles, 11 days for books	
III. STAFFING /INFRASTRUCTURE									
A. Integrated library system:									
1. What integrated library system do you use?	NOTIS	NOTIS	Innovative Interactive	NOTIS	NOTIS	NOTIS	NOTIS	NOTIS	VTLS
2. What functions does it support?	OPAC, circulation, Acq., cataloging, serials, reserves	OPAC, serials, acquisitions, fund accounting	Online catalog, OhioLink	OPAC, Acq., Cat., serials, circulation	Acq., circulation, cataloging, OPAC	PAC, Cat., authority control, Acq., Ser., Circ.	Cataloging, OPAC, Circ., acquisitions	OPAC, Acq., Circ., cataloging, serial holdings	Cataloging, authority control, Circ., keyword, closed stacks
3. Vendor:	Ameritech	Ameritech	Innovative	Ameritech	Ameritech	Ameritech	Ameritech	Ameritech	VTLS
B. Describe the staffing that supports your digital library efforts.	None					5 FTE: 1 Asst Dean; 1 systems librarian; 1 unix administrator; 1 other comp analyst for PC support	The systems dept. Is made up of 2 tech staff and approx. 23 student assts.	4 FTE	
1. Do you have a collaborative arrangement with academic/campus computing at your institution?	HSC-not for digital, other in process of developing SAR, FMHI-Yes	Yes	Yes	Yes		Yes	Yes	Yes	Informal
If yes, describe:	SAR-provide software/ hardware support & planning FMHI-in-house computer support center	Computer center runs NOTIS hardware.	Provide support for network infrastructure and consulting and limited hardware repair.	Consultation and training		Work with them on statewide lib. network of acad. libraries, and additional network of public and school librarires; on inf. del. systems for campus.	The Libraries and Computer Services are in the same division, and all dept. directors in each, report to one Dean of Libraries and Information Services.		We are all under the Vice President for Information Systems.

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Peer Group Institutions									
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2. Can you estimate how many FTE staff support the virtual library: (development, maintenance, selection of electronic resources, training, etc)?	HSC,STP, TPA-None; SAR-2 FTE; FMHI-4	6 FTE	15	2 FTE	No	This is part of lots of FTE for development and maintenance.	4	12	3 FTE
3. Does your library staff have responsibility for training users on all computer applications in the library? (electronic databases, Internet, utility software, e-mail)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Describe:	ALL: LUIS, CD-ROM databases, LEXIS/NEXIS. FMHI-Specialized research databases.	We have formal classroom teaching.	All the described plus various local applications.	Service is available from each service point.		Internet mostly.	Training is given continually on all applications.	Bibliographic instructor trains users on NOTIS, Internet use, and CD-ROM databases.	Not all. Library staff only train users on how to use the various databases.
4. What percentage of time is trained staff available to assist users?	HSC,SAR-75%; TPA, FMHI-100%	40 hrs/wk	100%	95%	80%	50%	100%	95%	70% at ref. desks
5. Please describe your staff training program in relation to the virtual library. Include technical and public services programs:	HSC,STP, TPA,SAR-None; FMHI-Internet, WWW, electronic resources, scanning technology			Departmental basis		We have no organized programs. Sessions are convened as needed.	No formal program is presently in place.	Training unit teaches staff NOTIS, LAN usage, Internet use, applications software and Web page training on request.	We have very basic training in basic computer skills.
C. Cataloging:									
	HSC,STP-								

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1. Do you classify and catalog digital/electronic materials for your OPAC?	No; TPA,SAR, FMHI-partially	Yes	Yes	Yes	Yes	Yes	Yes	Partially	Yes
2. If yes, what do you catalog (online databases, CD-ROMs, full-text titles available through a gateway service such as LEXIS/ NEXIS/Firstsearch, etc.)?	TPA,SAR-CD-ROM and diskette titles.	Only CD-ROM titles.	ALL	CD-ROMs	Online databases, CD-ROM, full-text titles available through gateway.	Computer disks and compact disks only.	CD-ROMs and online databases.	CD-ROMs	CD-ROMs
3. How do you classify/catalog these records (title only, holdings, full cataloging records in OPAC, etc.)?	Full	Full	Full	Full	Full	Full cataloging	Full cataloging	Full	
4. Who maintains these kinds of records in the OPAC (currency, holdings, location, etc.)?	Cataloging Dept. FMHI-LTAII and librarian.	Cataloging Dept	Cataloging Dept	Cataloging Dept	Resource Services Dept	Cataloging Staff	Special materials cataloger	Cataloging	Cataloging
5. Are you using any metadata standards/analysis for relational databases?	No FMHI -Yes	No	No	No	Some indexing analytics for digitized newspapers	No	No	No	
If yes, describe:	FMHI-developing a taxonomy for managed care.				Done as part of Caribbean newspaper digitized imaging project, funded through Mellon Foundation				
6. Do you provide enriched MARC records with links to	SAR,TPA, HSC,STP-No;FMHI-experimenting with Pro-	Table of Contents Notes. Cataloging Dept	No	Yes Cataloging Dept	Yes Resource Services	No	No	No	Testing

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Peer Group Institutions									
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HTML documents (i.e. URL, subject headings, notes field)? If yes, who maintains those records?	Cite=s new Web-search package.				Dept				
7. If you are cataloging resources on the Web, who decides what is added to the collection?	FMHI -the librarian		Selectors Committee		Collection Managers		A committee from Reference, Special Materials cataloging and Collection Management.		
D. Hardware/Equipment /Labs									
1. Do you have a public access computer lab in the library?	HSC,STP, SAR-No; TPA-Yes(2)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
2. If so, teaching lab only?	Yes	Yes	Yes		Planning		No		
3. General patron use?	SAR,STP, TPA,HSC-No; FMHI-Yes	Yes	Yes	Yes, when classes are not scheduled.	Yes		Yes	Yes	Yes
4. Other:			Application demo=s						Closed teaching lab
5. How many terminals are availabe for:									
a. library staff?	STP-8; HSC-18; FMHI-2; TPA-35	125	Over 200	95	Trying to phase out terminals, but still have over 400 in use by staff and public.	100			70
b. public access?	STP-20; HSC-9; TPA-52; FMHI-4; SAR-12	40	Over 150	83		50		20 VAX	40
6. How many									

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Peer Group Institutions									
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PC=s/MAC=s are available for:									
a. library staff?	STP-18; HSC-16; FMHI-4; TPA-85	150	Over 200	98	247	100	180		200
b. public access?	STP-11; HSC-4; TPA-67; SAR-5; FMHI-6	40	Over 100	81	44	0	180	80	50
c. Briefly describe the generation of computers (PC=s or MAC=s) you are using (286's, 386's, 486's, Pentium, PowerMac, etc.).	STP-286's-486's; HSC-Mainly 386's; TPA-2-,3-,486's; FMHI-486's,286's	486's and Pentiums	286 thru 586, Apple II thru MAC 8500	286's-few, 386's-many, 486's-some, Pentiums	8088, 386's, 486's, Pentium, 680x0, PowerMac	286,386, 486, Pentium	We have all of the described except for 386 generation.	Mac 68040, 601;IBM 486/20/ 486/66; Pentium	286's, 386's, 486's, Pentium, PowerMac, UNIX workstations
7. How are the public access workstations used?									
a. online catalog	TPA,SAR, STP, FMHI-Yes HSC-No	Yes	Yes	Yes	Yes	some Yes	Yes	Yes	Yes
b. Internet/Gopher/Lynx	TPA,STP,FMHI-Yes; HSC,SAR-No	Yes	Yes	Yes	Yes	some Yes	Yes	Yes	Yes
c. WWW	TPA,STP,FMHI-Yes, HSC,SAR-No	Yes	Yes	Yes	Yes	some Yes	Yes	Yes	Yes
d. e-mail	No FMHI-Yes	Yes	No	Yes	No	No	Yes	Yes	Yes
e. word processing, spreadsheets-(utility use of software)	No FMHI-Yes	No	No	No	No	No	Yes	Yes	Yes
f. CD-ROM, online, diskette-based resources	TPA,STP, HSC, FMHI-Yes SAR-No	Yes	Yes	Yes	Yes	some Yes	Yes	Yes	Yes
g. electronic kiosk	No	Yes	No	No	No	One	No	No	No
h. tutorials/CAI	STP,SAR-No; HSC,TPA,	No	No	No	No	No	No	Yes	No

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Peer Group Institutions									
	U of South Florida	*U of CA-Santa Barbara*	*U of Cincinnati*	*Florida State*	*U of Florida*	*Louisiana State*	*U of South Carolina*	*Texas A&M*	*VA Polytech Inst*
	FMHI-Yes								
8. Is your network running 10 Mbps or 100 Mbps?	10	Administrative LAN-10 Mbps; ElecBook Reserve LAN-100 Mbps	10	NA	Both		10	10	10
a. If 10 Mbps, do you have plans to migrate to 100 Mbps?	HSC,STP-not at this time; TPA,SAR-Yes	Yes	Yes				Not anytime soon	Hope	Yes
9. What type of printing capabilities are available to the user?		For staff only					Ability to print color or laser		Staff have many more
a. How many draft printers?	STP-9; HSC-11; TPA-56; SAR-7; FMHI-4	0	Over 400	48	10	10	0	25	20
b. How many laser printers?	STP,TPA-0; HSC,SAR, FMHI-1	10	20	None	3, adding more	0	6	9	4
c. Are the printers networked?	STP,TPA,SAR-No; FMHI, HSC-Yes	Yes	2	None	No	No	Yes	Yes, laser printers	Yes, to a central printer in photocopy where users are charged.
d. Debit/card reader system?	STP,SAR, HSC, FMHI-No; TPA-Yes	Yes	No	None	Yes	No	No	No	No
e. If you charge, how much per page?	TPA-34	7 4	Free	NA	104	No	104	No	104
IV. BUDGET									
A. What was the total operating budget for your library for the last fiscal year?	STP-$996,130; TPA-$7,148,000 SAR-$393,296; FMHI-$132,646	$13 million		$7,746,713	$16.2 million includes Health Center and Law	$7,000,000	$12 million	$11 6 million	$11 million
B. Budget Categories:									
1. Is there a separate	No	No		Yes	No	No	Yes	Yes, database	No

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Peer Group Institutions									
	U of South Florida	*U of CA-Santa Barbara*	*U of Cincinnati*	*Florida State*	*U of Florida*	*Louisiana State*	*U of South Carolina*	*Texas A&M*	*VA Polytech Inst*
budget for electronic resources?								category under materials	
2. Databases and software?	No	No		No	No-databases; Yes-software	No	Yes	Yes, all tracked under materials	No-databases; Yes-software
3. Amount allocated last fiscal year?	TPA-$370,000; STP-$21,820; FMHI-$13,615	N/A		$150,000	$465,232		$328,000	$610,993	$400,000
C. Budget for Hardware:									
1. Is there a separate budget for hardware?	No	No		No	No	Yes	No	Yes	No
2. Amount allocated for last fiscal year?	STP-$10,236; FMHI-$1,200	$300,000		N/A	N/A	$100,000		$200,000	
3. If not a separate budget item, can you estimate how much is allocated for electronic resources/ databases and hardware?	STP-$21,820; SAR-$35,000; FMHI-$16,000; TPA-$400,000	$50-75,000		$343,236	$233,514		$328,000		
D. Document Delivery:									
1. Can you estimate how much you are spending on document delivery?	STP-$933; TPA-$12,000; SAR-$250	No		$25,000	$16,439	No	$5,000	$286,270	$17-20,000
2. How are you fiscally supporting document delivery?	HSC-cost recovery; TPA,SAR-book budget	General Budget		$25,000	Auxiliary enterprise	Library Budget	Library absorbs cost		State support
3. Amount?	FMHI - $2,80	1-2 FTE +		$25,000 -			$5,000	$100,000 on-going library supplement $20,000 cost	Reinbursement for in-state lending

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Peer Group Institutions									
	U of South Florida	*U of CA-Santa Barbara*	*U of Cincinnati*	*Florida State*	*U of Florida*	*Louisiana State*	*U of South Carolina*	*Texas A&M*	*VA Polytech Inst*
	0	$15,000						recovery $166,270 staffing supplement	
V. A FUTURE LOOK AT THE VIRTUAL LIBRARY AT YOUR INSTITUTION									
A. What are your library technology plans for the next one to two years?	STP-increase hardware in new lib., electronic teaching lab, virtual library gateway. TPA-from 10 to100 Mbps, add Pentium PC=s, create network for printing. SAR-wiring, add PC=s, enhanced access to full-text resouces, digitize special coll; create lib. instruction lab, dev.	Continuing hardware and telecom upgrades.	Online access through the WWW to Innovative/ OhioLink services. 100 Mbps network. Total windows desktop environment. Multimedia presentations available. EDMS online video/teaching.	Add PC workstations in the public and upgrade staff workstations.	Replace dumb terminals for public, ugrade all public and staff hardware to networked workstations. Integrate access to print and electronic resources via WWW.	Unified workstation for access to all resources, computer lab and classroom space.	Acquisition and creation of full-text databases, conversion of numerous collections to electronic format, introduction of wireless computing, moving multimedia into mainstream.	Provisions for remote access to all electronic services; a new integrated library system; a web-based gateway to library services; planned electronic intrastructure maintenance.	

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Peer Group Institutions									
	U of South Florida	*U of CA-Santa Barbara*	*U of Cincinnati*	*Florida State*	*U of Florida*	*Louisiana State*	*U of South Carolina*	*Texas A&M*	*VA Polytech Inst*
	WWW pages; electronic reserves FMHI-development of more Web-based local databases; linkages to numerical/ statistical databases, links to geographic info systems/ geospatial data;access to the new FMHI data center and its databases, applications and publications; add e-journals and tables of contents								
B. What resources will be necessary to realize these plans?	STP-funding; TPA-fully staffed systems dept. and funding; SAR-planning, funding and staff; FMHI-money, staff, and time.		Expansion of WWW, external WWW links, and internal campus backbone. The acceptance of a standardized 32 bit operating system.	Fully staffed systems unit of 3 and funding to support infrastructure and equipment.	OCO funding to replace equipment. Staff committed to ongoing development.	Money	Upgrading of network infrastructure, additional personnel and training.	Judicious use of existing funds; enhanced staff training.	
C. What forces do you see on the horizon that will help to shape the virtural library at your institution?	STP-Viirtual Lib Planning Comm TPA-leadership, culture shift, organizational change SAR-decreased staffing & funding resulting in reallocation of staff and financial resources. Rapidly advancing techno-		The continuing development of multimedia packages and online services available through the WWW such as JAVA, 3D, etc.	Statewide initiatives	More and more university people will have network capable access technology in homes, offices, classrooms and be able to use it. Higher expectations that the right resources will be made easily available to them.	Convert to electyronic resources increasingly, making database specific decisions as to mainframe or CD-ROM load depending on use and licenses.Reallocating resources within our flat budget. Also will be working collaboratively with	Co-operation and competition among researchers and scholars on campus. Competiton among Internet and other communication providers following the latest steps in deregulation.	Copyright issues; institutional committment to making electronic resources available to all faculty/ students, commercialization of the web; technological advances (JAVA, Shockwave, etc.), decreasing committment of government to	

Peer Group Institutions									
	U of South Florida	*U of CA-Santa Barbara*	*U of Cincinnati*	*Florida State*	*U of Florida*	*Louisiana State*	*U of South Carolina*	*Texas A&M*	*VA Polytech Inst*
	logical resources that will transfer emphasis from ownership to access; FMHI-new dean who is actively invested in new technologies and sees the library as information nexus. Active support from the computer support center in the dev. of new programs and applications.					computing and with academic affairs to meet tech. needs of campus-student needs, teaching needs, distance learning. Faculty and students are increasingly using electronic resources. Deans are promoting use of technology in teaching/research, faculty MUST make transition.		fund all levels of education.	

APPENDIX FIVE:
RECOMMENDED STANDARDS

Standards:

Technical

1. Adopt common schemes for the naming of digital objects and the linking of these schema to protocols for object transmission, metadata, and object type classification:
   a. MARC,
   b. Standard Generalized Markup Language (ISO 8879)
   c. DTD
   d. Z39.50
   e. JPEG and TIFF as standards for image files
   f. Text Encoding Initiative standards for document format, and
   g. UNICODE (native languages storage and retrieval)
   h. Directory Information Format (DIF) for metadata records for data sets
   i. Federal Geographic Data Center (FGDC) metadata standard to describe spatial data sets.

2. Adopt security and authentication standards and protocols (time-stopping, cryptographic hashing and encoding).

3. Adopt electronic digital interchange (EDI) standards and protocols.

4. Adopt intellectual property payment encryption protocols.

5. Adopt de facto standards or commonly used packages for the operation and migration of archival information.

6. Adopt the Project EASI: Equal Access to Software Information for services to users with disabilities.

7. Adopt the standards found within the Task Force on Archiving Digital Information report on APreserving Digital Information.≅

Services

1. University of California Libraries Collection Development Committee's Principles for Acquiring and Licensing Information in Digital Format.

2. SUS Electronic Collections Plan

3. SUS Task Force Report Workstations Standards.

4. ISO/IEC/ITU Standards for the Global Information Infrastructure (formerly NII).

5. ACRL AGuuidelines for Instruction Programs in Academic Libraries.≅

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6. ACRL AFair Use Guidelines for Electronic Reserves Systems.≅

7. National Interlibrary Loan Code for the United States.

8. Florida Plan for Interlibrary Cooperation Resource Sharing & Network Development.

9. USF Publications Guidelines so that all Virtual Library Project materials may be identified immediately with the University of South Florida.

STANDARDS RESOURCES LISTING

Technical

EDUCOM

http://www.educom.edu/web/publications
Materials and standards promoted through EDUCOM are available through their web page

IETF: Internet Engineering Task Force

http://www.libertech.com
http://www.ietf.cnri.reston.va.us/home.html
http://internic.net/ds/dspg0intdoc.html

Internet developers refer constantly to the thousands of documents that define the Internet's protocols. The relevant information changes constantly, and has been since 1969. The official IETF documents contain over 85,000 internal cross-references, while many later documents obsolete earlier ones, etc.

IISP Working Groups: ANSI

http://www.ansi.org/iisp/

ISO: International Standards Online

ISO/IEC/ITU Standards for the Global Information Infrastructure (formerly NII)

http://www.iso.ch/welcome.html

The Catalogue of all ISO International Standards including drafts is available at this site. A search tool is provided to find information by keywords or by ISO reference number. Information on how to order ISO standards and publications is given. Complete lists of ISO members and technical committees are provided as well as general background on ISO, its structure, and the scope of responsibility of each technical committee. The facts on the ISO 9000 Forum, the information service on ISO 9000, the series of International Standards for quality management are also available.

National Information Standards Organization (NISO) Standards

The National Information Standards Organization (NISO) in collaboration with the Coalition for Networked Information (CNI) has established an electronic forum on the Internet to provide quick and easy access to information about NISO's standards program. NISO documents can be accessed by anonymous FTP or Gopher.

To access using FTP, ftp toftp.cni.org login as anonymous (send e-mail address as password) cd

pub/NISO the dir command will bring up a listing of available files and further directories.

Project EASI

AEqual Access to Software Information for services to users with disabilities≅
AComputers and Students with Disabilities: New Challenges for Higher Education≅
AEASI Asaptive Computing Self-Evaluative Kit for Colleges and Universities≅
http://easi.ed.gov/
http://www.rit.edu/~easi

RLG Task Force on Archiving Digital Information

APreserving Digital Information≅
http://www.rlg.org/ArchTF

Services

Association of College and Research Libraries (ACRL)

ACRL AGuidelines for Instruction Programs in Academic Libraries.≅
ACRL AFair Use Guidelines for Electronic Reserves Systems.≅
ACRL 50 E. Huron Street; Chicago, IL 60611-2795
(321) 280-3248

Association of Research Libraries

ARL 21 Dupont Circle NW; Washington DC 20036
(202) 296-2296

Florida Plan for Interlibrary Cooperation Resource Sharing & Network Development

State Library of Florida, Tallahassee, Florida

National Interlibrary Loan Code for the United States

American Library Association. Interlibrary Loan Committee.
Chicago: American Library Association, 1981.

State University System Standards

Available from their respective committees
SUS Electronic Collections Plan
SUS Task Force Report Workstations Standards

University of California Libraries Collection Development Committee's Principles for Acquiring and Licensing Information in Digital Format

Available from University of California- Berkeley, Collection Development Chair David Farrell-dfarrell@library.berkely.edu

USF Publications Guidelines

Available from the USF Public Affairs Office, ADM 264; x4014

GLOSSARY

ANSI: [American National Standards Institute] ANSI serves as an accrediting agency, clearinghouse, and publisher for voluntary standardization in the United States. Is the U.S. representative to the International Organization for Standardization (ISO).

ARIEL: An electronic document delivery application developed by the Research Libraries Group. Materials are scanned into ARIEL as an image file and sent as electronic image to a receiving PC to be printed or forwarded electronically to the patron.

DIGITIZATION: The transfer of print information to an electronic format.

DOCUMENT TYPE DEFINITION: [DTD] Document type definition. Used to determine format of headers, encoded or embedded text, and additional information on genre and type of document essential to accurately code the item for searching, browsing, or retrieval. Accepts all documents in valid SGML syntax and is able to handle all the attributes of SGML.

EDI: [Electronic Digital Interchange] An international standard for the electronic exchange of information.

E-JOURNALS: Journals which are in an electronic text and/or image format distributed via an electronic network.

FCLA: [Florida Center for Library Automation] An agency created by the State of Florida to provide automation services to the university libraries within the State University System.

FIRSTSEARCH: An online system of over 50 bibliographic and full-text databases, developed by OCLC (Online Computer Library Center). USF is currently the only SUS library subscribing to FirstSearch which is available through the LUIS menu.

GALILEO PROJECT: [Georgia Library Learning Online] Legislated by the State of Georgia to create Aone statewide library.≅ Components include: Connecting all university system and off-campus center libraries to the statewide educational communications network, PeachNet; providing the full-text of core academic journals electronically; converting all University system card catalogs to computer format and fully automating the libraries; supporting universal borrowing; facilitate sharing of research journals; providing electronic access to census data; distributing state publications electronically.

GATEWAY: 1. an interface to a complex online system. 2. A computer system that transfers data between normally incompatible applications or networks. It reformats the data so that it is acceptable for the new network or application before passing it on.

GIF: [Graphics Image Format] Developed by CompuServ, GIF is one of the most widely used graphics storage formats for storing complex images and is one of the two formats in which images can appear in HTML documents.

HOME PAGE: The index or start page for a web site.

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HTML: [HYPERTEXT MARKUP LANGUAGE], a subset of SGML, provides codes used to format hypertext documents. Does not support foreign language character sets or mathematical and scientific notation.

HTTP: [Hypertext Transport Protocol] A hierarchal search protocol used in the World Wide Web browsers, Mosaic and Netscape.

IETF: [Internet Engineering Task Force] A volunteer group that investigates and solves technical problems and makes recommendations to the Internet Architecture Board. Many of the solutions the IETF recommneds end up as *de facto* standards.

ILS: [Integrated Library System] A software package which allows multiple library functions (circulation, acquisitions, cataloging, and the online catalog) to be automated using the MARC record format, bibliographic and authority, as the base record for the system. NOTIS is the ILS that the State University System Libraries use.

INTERFACE: Technically, a shared boundary defined by functional characteristics, common physical interconnection characteristics, and other characteristics specific to the systems involved in the operation. Used by the VLPC, an integrated jump-off point for the user to access the virtual library without having to work through the many different protocols and mechanisms within LUIS and other electronic resources.

INFRASTRUCTURE: The hardware components of a computer network.

INTERNET: One portion of the Net. Often used synonomously with the Net, the Internet is a specific grouping of networks of networks that are subsumed under the larger Net.

INTEROPERABILITY: The ease of operation between disparate systems, platforms, hardware, and applications within a networked environment. Interoperable systems rely upon communications standards and defined protocols to allow programs and systems to talk to each other.

ISO: [International Organization for Standardization] Established to promote the development of standards to facilitate the international exchange of goods and services, and to develop mutual cooperation in the areas of inteleectual, scientific, technical, and economic activity.

JPEG: [Joint Photographic Experts Group] JPEG refers to the standards committee which developed it, a compression file, and a graphic file format. JPEG files typically contain photographs, video stills, or other complex images. Since Mosaic is unable to display JPEG format files as online images, it uses a special viewer window in which to view them.

LEXIS/NEXIS: An online system which contains bibliographic and full-text databases in the areas of current events, law, business, and medicine. Available for USF patrons through dedicated workstations.

LUIS: [Library User Information System] The online public access catalog, or public display module of NOTIS. LUIS displays the combined online catalogs of the SUS libraries. LUIS also includes a number of commercial bibliographic databases.

MARBI: [Machine Readable Bibliographic Committee] A committee comprised of various libraries and library organizations which work on standardizing and coding the MARC record formats.

MARC: [Machine Readable Cataloging] 1. A standard used in libraries to create an online catalog. 2. The basic catalog record, bibliographic and authority, in electronic format. Allows data encoded within specific fields to be searched, retrieved, and formatted for display.

METADATA: Metadata is data about data. It is a way of documenting information about data set and the context of the information the data sets hold. Many operating systems use metadata to contain directory information about other data on a given storage device.

THE MONTICELLO ELECTRONIC LIBRARY PROJECT: A library initiative developed by SOLINET (the southeastern component of OCLC) to develop partnerships and projects in the electronic delivery of materials. Projects include journals, government resources, theses and dissertations, and special collections.

NET: The global computer network of networks that includes Bitnet, the Internet, and affiliated research and education networks.

NISO: [National Information Standards Organizations] Creates and maintains standards in the fields of libraries, publishing, and information science.

NIST: [National Institute of Standards and Technology] Created by the Congress Ato assist industry in the development of technology.≅ Currently working on standards for electronic format of documents and data retrieval mechanisms.

NOTIS: [Northwestern Online Total Integrated System] A fully integrated online library system that contains acquisitions, cataloging, circulation, serials management, and public access catalog modules. The system currently in use by the State University System Libraries in Florida.

OCLC: [The On-line Computer Library Center] Provides a centralized set of library services that is utilized by the vast majority of research libraries. Services include cooperative cataloging, interlibrary loan, and the FirstSearch online collection of databases.

PROTOCOL: A definition of how computers will act when talking to each other. Standard protocols allow different types of computers and other hardware to agree on what the data means.

SEARCH ENGINES: Search engines permit a user of the Web to look for Web sites online by subject and/or keyword. Examples are Lycos, WebCrawler, and NetFirst.

SGML: [Standard Generalized Markup Language- ISO 8879] An ISO standard document definition, specification, and creation mechanism that makes platform and display differences across multiple computers irrelevant to the browsing, delivery, and rendering of documents. Used in the markup for UNICODE.

STANDARDS: 1. Guidelines or models against which services are compared. 2. Specifications or Atechnical≅ standards for format structure, character sets, and code lists. 3. Protocols which guide institutions by ensuring common languages or technologies, and/or recommend minimum guidelines to follow.
TCP/IP: [Transmission Control Protocol/Internet Protocol] A multi-layered transmission protocol developed to permit interoperability between networking systems.

TEXT ENCODING INITIATIVE: (TEI) An international project to develop guidelines for the preparation and exchange of electronic texts for scholarly research, and to deal with the immense variety and complexity of

materials being transferred from print to online markup language. These materials can range from medieval manuscripts to terminological data banks.

TIFF [Tag Image File Format] developed by Aldus Corporation is a standard in most paint, imaging, and desktop publishing programs. TIFF allows for the storage of grayscale and color images. TIFF Is generally not used in HTML documents.

UNCOVER/REVEAL: UnCover is a periodical index and a document delivery system for the 16,000 journals held by the Colorado Alliance of Research Libraries. **REVEAL** is a mail alert service which allows patrons to develop a profiles which will either provide the patron, on a regular basis, with the table of contents of selected journals or subject searches done in the databases. Patrons may then order copies of desired articles.

UNICODE: Is fast becoming the *de facto* standard for documents that use other character sets other than the ISO Latin 1 character set (also known as low ASCII).

URL: [Uniform Resource Locator] This the WWW server address for a Web site. For example: the Internet Public Library's URL is:

http://ipl.sils.umuch.edu/svcs/onthejob/techsvcs.html.

VIRTUAL LIBRARY: The virtual library is an assortment of services and collections, made accessible through networks that range beyond individual campuses or research libraries and is accessible from any location.

WORLD WIDE WEB: [Also referred to as the Web or WWW]. The Web is a hypertext system with a network of accessible information that contains billions of bytes of text and graphic elements. The Web functions through a computer server located at CERN. WWW browsers, such as Mosaic and Netscape, use the HTTP (Hypertext Transport Protocol) to search the Web.

Z39.50: NISO standard for the retrieval and delivery of electronic data using command language standards.

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